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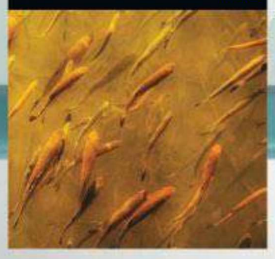

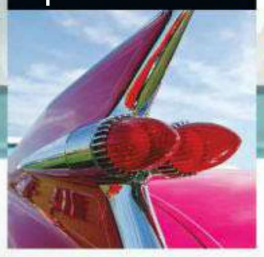

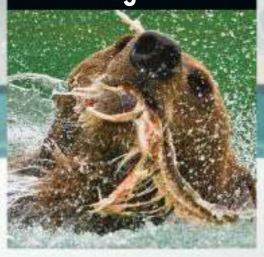

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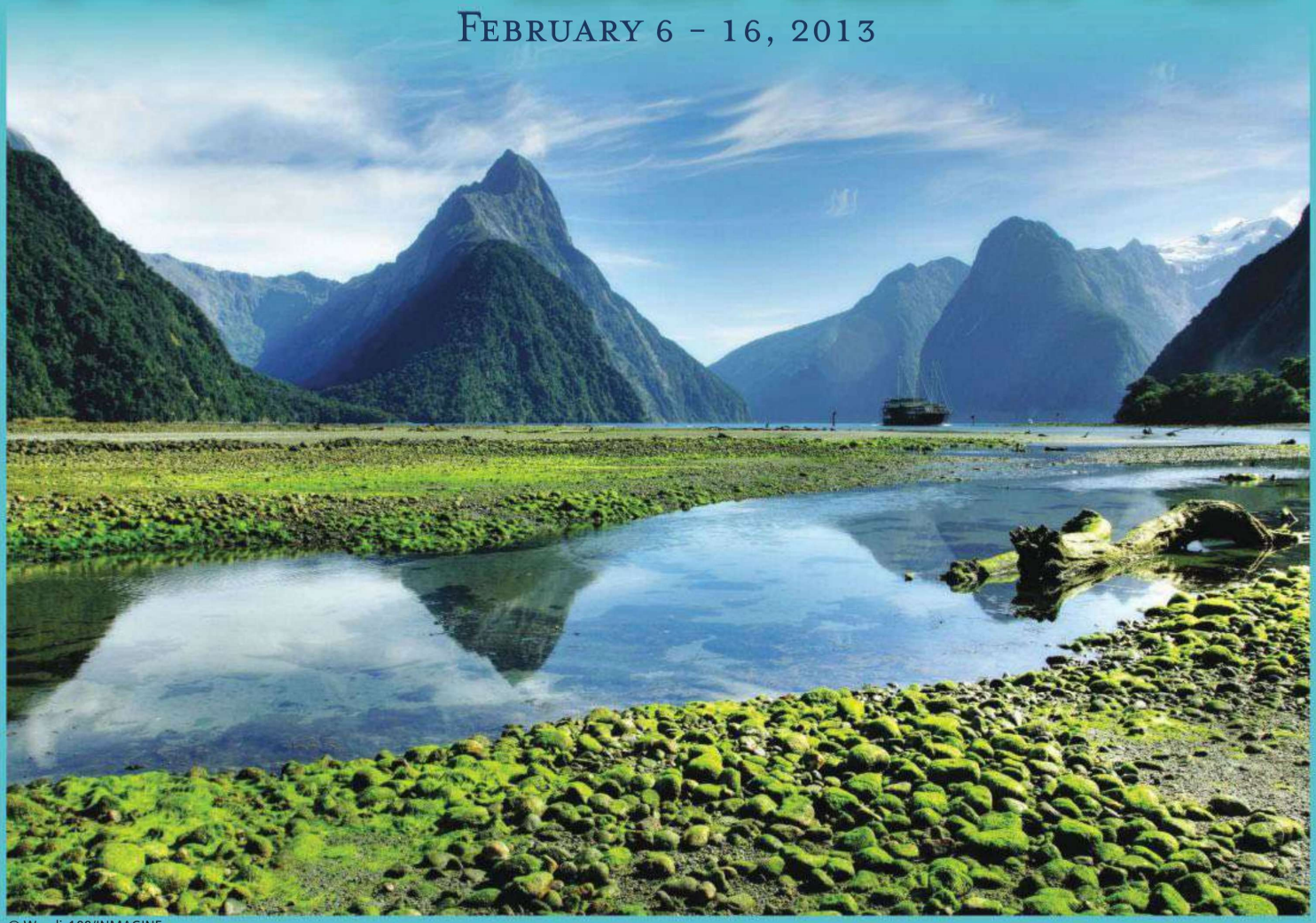

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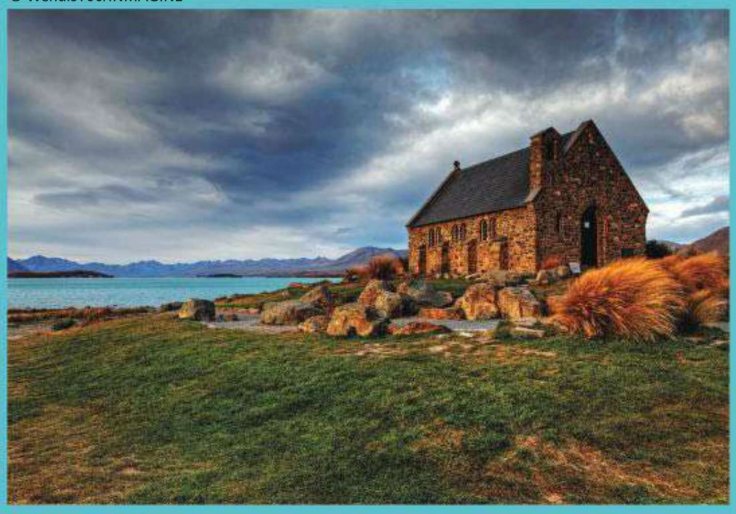

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Starting out from Christchurch, we will soon reach glorious Mount Cook. Capture the stunning scenery on the Glacier Explorer Tour, which includes a walk and cruise granting up-close access to the Tasman Glacier icebergs and offers a different perspective of the Alpine Backbone of the Southern Alps.

Travel on to Queenstown for a scenic gondola ride. Enjoy the opportunity here to document the historic Maori tribe, an indigenous people as fascinating as they are visually intriguing. Paint energetic portraits of Maori Haka dancers during a private outdoor photo shoot, and let the gorgeous natural backdrop amp up the drama.

As soon as you turn your lens on Milford Sound's mirror-like surface and majestic encircling mountains, you will see why Rudyard Kipling once described it as the Eighth Wonder of the World. Keep your camera at the ready during our launch cruise which will take us past radiant views of the Tasman Sea and Stirling and Bowen Falls. More wondrous sights await as we head back past Te Anau, Kingston, and at last around the shimmering shores of Lake Wakatipu to Queenstown. In this vibrant city, the lively citizens and the picturesque Remarkable Ranges provide ample opportunities to practice more action and landscape photography.

Prepare for another day chock-full of photo ops when we head to Fox Glacier and nearby Lake Matheson. A walk through lush rainforest with a pause at viewing platforms along the way will offer memorable panoramic views of the highest peaks with native trees, birds, and flora.

Next fill your frame with the alpine delight of the snow-topped Southern Alps, as well as the sparkling lakes, meandering meadows, and idyllic farmland surrounding the range. A great juxtaposition of manmade and natural creations can be seen at the Otira Viaduct, nestled in Arthur's Pass. Checkerboard shades of greens and golds make up the truly unique landscape of the Canterbury Plains. Be sure to have fun with the interplay of colors and shapes in this unique locale.

Don't miss out on this incredible expedition to New Zealand, where nature's magnificent tableau truly makes it a photographer's paradise. Sign up today!

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Please Recycle This Magazine

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SAM KAPLAN (PRODUCTS); JASON HAHN (BEARS); MICHAEL MASSAIA (CAFÉ)

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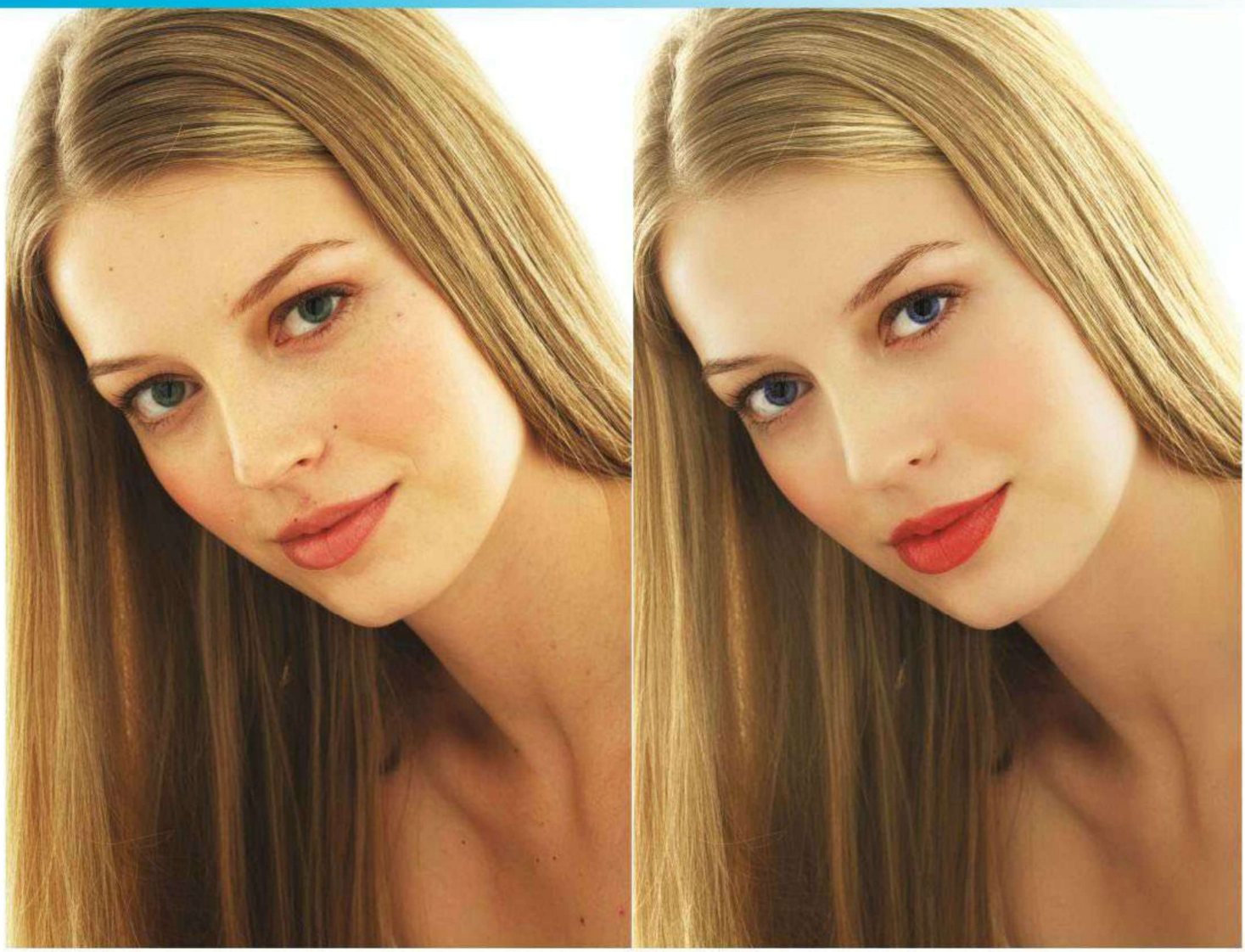

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When Price is an Issue

Welcome to our annual bargain issue, in which we hunt for the best deals in gear. This doesn't mean we've necessarily brought you the least expensive stuff—we often look for that elusive point at which a small step up in price yields a big jump in performance.

One thing we don't take into account? Rebates, whether from manufacturers or retailers. These tend to be short-lived, and you may have to wait for months to realize the discount. We also skipped limited-time discounts, since we start preparing this issue months before you read it.

That's why you won't find any photo printers among our picks. Not that there aren't some fantastic deals on them right now. To the contrary! I've seen one top-drawer inkjet go for $1,000 off at a major retailer—but only for a few weeks, before the price went back up. So if you're shopping for a new printer, keep an eye out for special promotions, and put your savings into a fund for the ink.

Here are some more deal-hunting tips from our editors:

- When a product gets updated, the model being replaced or pushed downstream will drop in price. Witness Canon's EOS Rebel line, for instance: With the introduction of the new T4i, the price of the T3i has plunged $220.
- If you're looking for a camera outfit, check the multi-lens kits. B&H is already selling the Nikon D5100 at steep discount, and with the kit of 18–55mm and 55–200mm Nikkor VR lenses, you get an additional $300 off—in the form of an in-store rebate—for a total price of $796.
- With such kits, though, make sure they are lenses you want, not Brand X.
- Avoid Internet-only sellers, generally, unless you know they are absolutely reliable. If you're buying from, say, Amazon, put the order through Amazon rather than the supplier. We prefer retailers with a brick-and-mortar presence.
- Items like memory cards from Internet-only sites are very often counterfeit.
- Always make sure your gear is covered by the manufacturer's warranty.
- Many manufacturers have a sales outlet on their websites, where they offer closeout and even refurbished gear.
- Finally, shop responsibly: If you spend time at your local camera store, getting advice and trying out gear, don't buy it from a discounter online. You may save a few bucks, but you will lose a vital part of the photo community.

Miriam Leuchter

What is This?

With our partner Aurasma, we've brought you a free Android and iOS app, PopPhoto Interactive, that bridges the divide between print and digital. It uses image-recognition software to launch video or other enhanced content on your camera-equipped smartphone or tablet. Search for it at the app store, and look for this icon in our pages to tell you when to use it.

NEWSSTAND The Pentax K-30, Fujifilm FinePix XP170, Canon 40mm f/2.8 EF, and Rokinon 7.5mm f/3.5 fisheye are among our top steals, page 57. Photo by Satoshi.

SUBSCRIBER Michael Massaia, whose "Wayne Flood Zone - 4am" graces this cover, proves that for some photographers film still rules. See more on page 64.

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KING OF THE MOUNTAIN

Catching the action from the sidelines at the 2012 Mountain Bike World Cup, our Web editor Stan Horaczek snapped this shot of overall downhill winner Aaron Gwin as he tore down the course. Panning with a Pentax K-30 and 18–135mm f/3.5–5.6 Pentax-DA WR lens as Gwin approached speeds of nearly 40 mph, he froze the action with an exposure of 1/800 sec at f/3.5, ISO 1600. For our full test of this rugged DSLR, see page 71.

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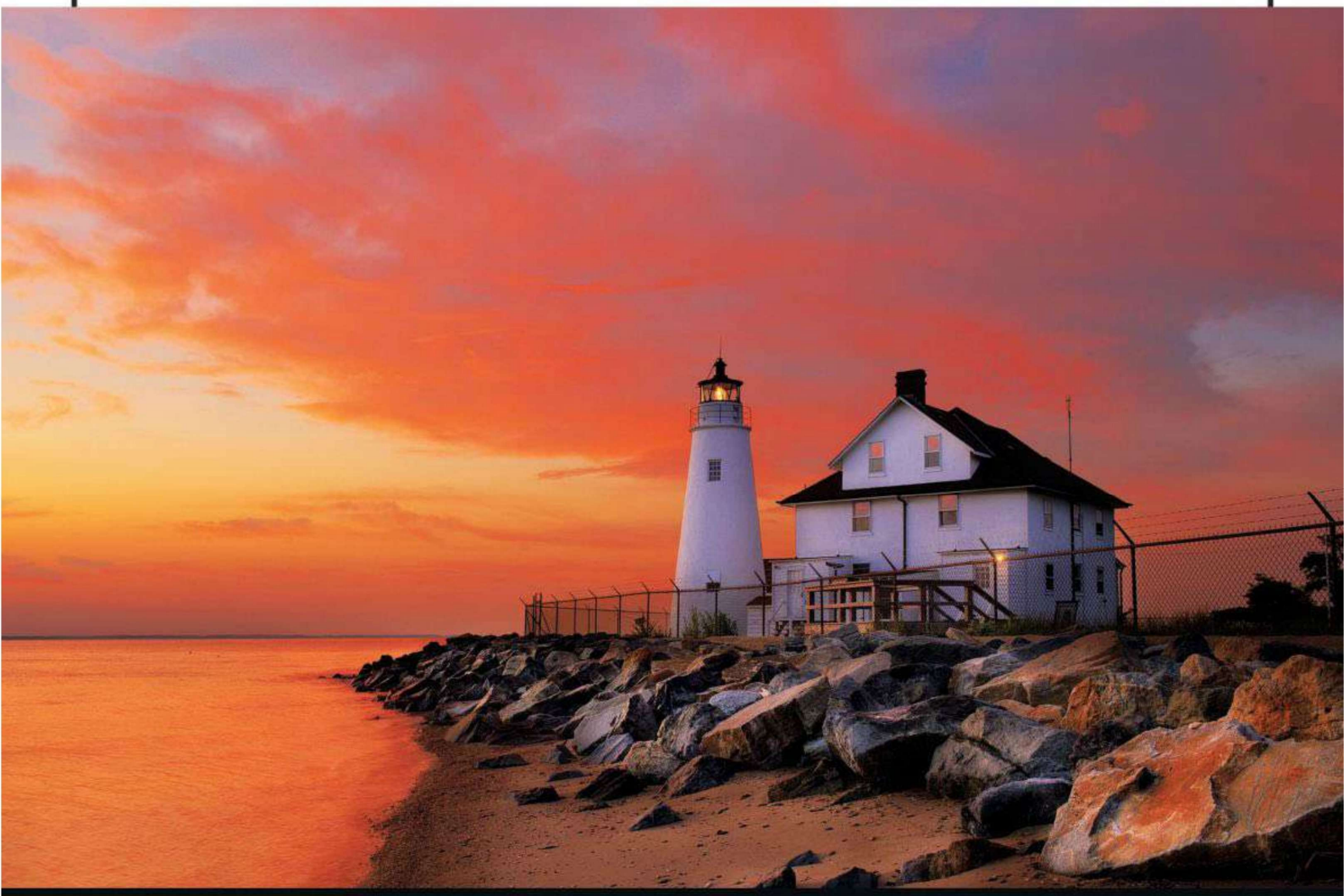

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NEXT

THE HOTTEST NEW STUFF AND THE TECHNOLOGY TRENDS BEHIND IT

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WE WANT THIS

PRINT OUT

Canon's new 4x6-inch printer is small enough to take with you

THESE DAYS photographers only rarely make it to the lab to get 4x6-inch prints, or even get around to uploading and ordering small prints online. But if you don't want to fire up a large-format printer just to make hard copies of your snapshots (particularly when you shot with a smartphone or tablet), or if you want to hand prints out at an event, a 4x6 printer is a great, inexpensive addition to your output arsenal.

We like Canon's new Selphy CP900 for lots of reasons. It's super-portable, with a small-scale print tray (not shown) that's easy to pack for travel.

There's a card slot, of course, for making quick prints without a computer. Its Wi-Fi connectivity makes it easy to print from any computer, and—more importantly—from any iOS or Android device via Canon's Easy-PhotoPrint mobile app.

Smaller and lighter than its predecessor, the Selphy CP800, this printer can also be powered by an optional rechargeable battery, so you can print souvenirs at big events, even if they take place far from a power source.

SATOSHI

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STEADY ZOOMS

Nikon's latest lenses add Vibration Reduction

Nikon's new $597 full-frame 24–85mm offers a tempting alternative to pricey 24–70mm glass.

WITH TWO recently announced Nikkor lenses, Nikon offers its full-frame (FX) and APS-C (DX) DSLR shooters new ways to beat the shakes in very useful zoom ranges. Both sport VR II image stabilization, high-speed, silent SWM focusing motors, internal focus, and what Nikon is calling manual-priority autofocus—using it, you can touch up your focus manually while the lens is still set to AF.

24–85mm f/3.5–4.5G Nikkor AF-S FX ED VR
$597, street
nikon.com

The 24–85mm f/3.5–4.5G Nikkor AF-S FX ED VR's standard 3.5X wide-to-moderate-tele zoom range covers about 85 percent of our typical shooting needs. In many ways, it's as desirable as the pro's 24–70mm f/2.8 Nikkor. Except it's significantly lighter and less expensive (just $597, street), while offering more zoom range, greater magnification, and, not least, image stabilization.

The costlier AF-S DX Nikkor 18–300mm f/3.5–5.6G ED VR ($1,000, street) for APS-C bodies is neat, too. It boasts Nikon's widest zoom range yet: 16.7X. Plus, it offers 1:3.2 subject magnification and, as a 27–450mm full-frame equivalent on APS-C, lots of telephoto reach.

SPLASH SHOT

Waterproof video cam for 20.4MP stills

RUGGED cameras are typically bulky, with prominent bumpers and gaskets. But Sony's geotagging, 1080p-capturing Handycam HDR-GW77V strategically places its rubber grips to get clean lines while still providing shock protection on drops up to 5 feet.

The 10X optical zoom lens opens up wide to 29.8mm (35mm equivalent) for your next close-up with a hammerhead shark, and Sony claims that the 921,000-dot 3-inch LCD touchscreen is fully functional while submerged—down to the camera's max depth of 16 feet.

Plus, Sony's "Underwater Mode" promises to automatically adjust the white balance for those bluish conditions below the surface.

Sony Handycam HDR-GW77V
$699, street
store.sony.com

NEWS FEED

> Making a single camera out of 98 synchronized 14MP cameras aimed through a single lens, a research agency for the U.S. Defense department found a way to take ultra-high-res pictures.

> Alas, Ritz Camera filed for Chapter 11 bankruptcy protection—its second time in three years.

INSIDE TECH

Long Range

The tiny, 1/3.91-inch sensor on Sony's new ruggedized HD-GW77V allows for a full frame-equivalent focal range of nearly 30–300mm, yet it still has five million effective pixels (interpolation bumps resolution to 20.4MP). Weathersealed gaskets keep dust and moisture out, and its streamlined case still out-classes comparably shock-proof competitors.

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25 sheets of 11x17 inches, $40, street
www.ilford.com

Ilford claims that the paper's instant-dry nanoporous surface will work well with both pigment and dye-based inkjet printers, but will produce a particularly wide gamut with dye-based models.

Profiles for a diversity of printers are available on Ilford's website, along with installation instructions and a guide to the best settings to plug into your printer's driver on output. It comes in sheets as large as 17x22 inches and in rolls as wide as 60 inches.

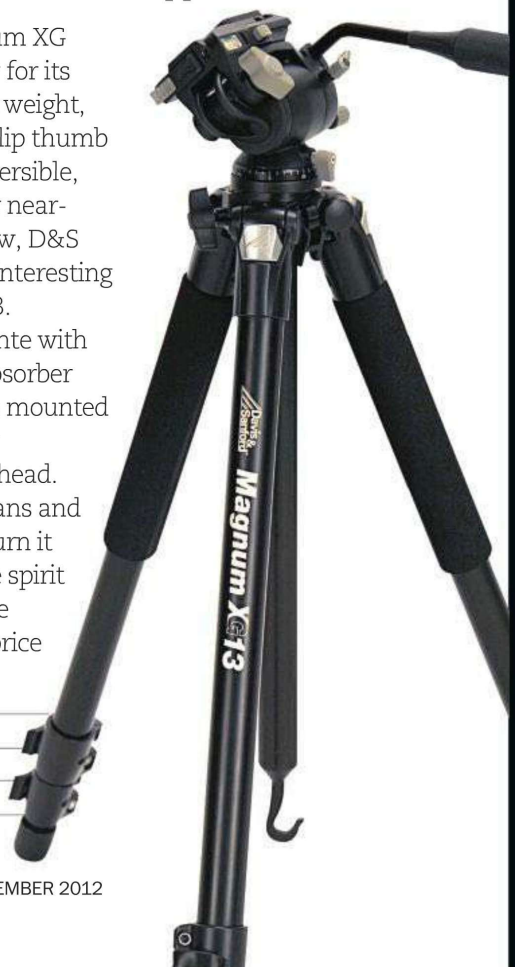
HEADS UP

A popular set of legs gets a new topper

DAVIS & SANFORD'S Magnum XG tripod has been a mainstay for its many useful features: light weight, four-way leg spread, easy-flip thumb locks, ballast hook, and reversible, two-part center column for near-ground-level operation. Now, D&S has paired the XG with an interesting new pan/tilt head, the FX13.

This fluid head ups the ante with an internal rubber shock absorber that curbs impact, should a mounted rig suddenly flip forward or backward on the unlocked head. This feature adds drag to pans and tilts, but there's a lever to turn it off. The FX13 also has three spirit levels and two quick-release plates. The kit's attractive price includes a case, as well.

Davis & Sanford Magnum XG13
$180, street
www.tiffen.com



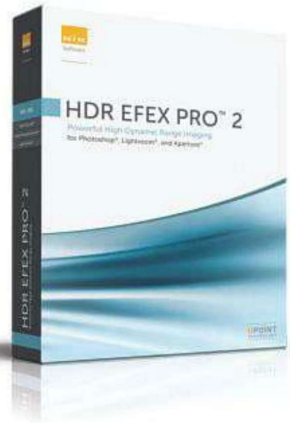
NEWS FEED

> Polaroid released the Z2300, a 10MP camera that prints on the spot. Though lighter and less expensive than the older Z340, it has a larger LCD screen.

> If the rubber grips on your new Canon EOS Rebel T4i turn white, blame an unusually high level of rubber accelerator used in one batch of the cameras. It may also cause an allergic reaction. Canon will provide free repairs, of course.

> Hotel Max in Seattle and Hotel Lucia in Portland welcome hipsters with a Lomography-filled overnight promotional package, complete with loaner cameras, film, and prints.

> Walgreens is now partnering with multiple third-party photo app developers to let iPhone, iPad, and Android device users send pictures directly to the nearest store for instant printing.



New Software

Nik HDR Efex Pro 2

We usually love Nik's plug-ins, but the first version of HDR Efex Pro didn't exactly make our hearts beat faster. But 2.0 ($100, direct; www.niksoftware.com) had us at hello: The interface is beautifully redesigned, and will be familiar to anyone who relies on Silver Efex Pro. This time the default look is natural, so if realistic HDR is your preference, you'll get it easily. The best news: You can choose your preferred tone compression method and control the strength of the effect.

THE LOWDOWN

WINDOWS 8: A PREVIEW

Call us optimists, but we always get excited for a new version of Windows. Due in October, Windows 8 has a new built-in app, Photos, that looks extremely helpful. Using the excellent SkyDrive service, Photos can back up your imports to the cloud. It also pulls together images from photo-sharing sites, social networks, and other PCs in a streamlined, elegant interface.

SIGMA

CAMERA : SIGMA SD1 : ISO100, F16, 1.3sec | LENS: SIGMA MACRO 105mm F2.8 EX DG OS HSM : 105mm | Copyright© 2011 Bill Sullivan

SIGMA LENS for DIGITAL
NEW RELEASE

MACRO 105mm F2.8 EX DG OS HSM

Case, Bayonet type Hood, Hood Adapter supplied.

A high performance, large aperture medium telephoto macro lens with Optical Stabilization (OS) allows hand-held close-up photography.

This large aperture medium telephoto macro lens with Sigma's Optical Stabilizer, makes hand-held close-up photography easy. Together with the SLD (Special Low Dispersion) glass and floating inner focusing, high quality images are always easily at hand from infinity to 1:1 magnification. Sigma's APO Tele-converters can also be used to give even greater macro reproduction.

www.sigmaphoto.com

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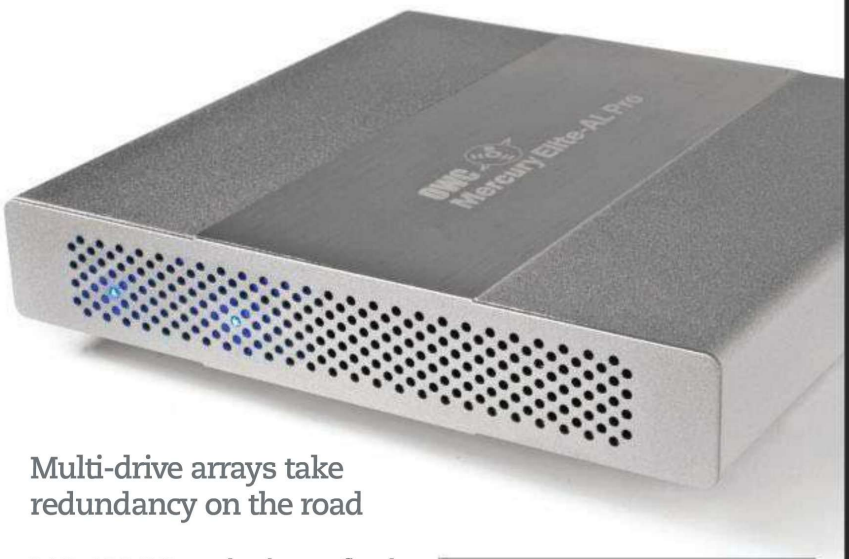

Multi-drive arrays take redundancy on the road

RAID ARRAYS used to be confined to big, bulky units tethered to an electrical outlet, which meant you had to wait until returning from the field to ensure the safety of your data. But with bus-powered tools such as OWC's Elite Pro Dual Mini, shooters can now make RAID-based backup solutions as mobile as laptops.

Sonnet's Fusion F2QR ($487, street, 2TB) uses eSATA and USB 2.0 ports, as well as dual FireWire 800 ports for daisy-chaining devices. G-Tech's G-RAID mini ($318, street, 1.5TB) has all of the above, but upgrades its USB port to 3.0. And ToughTech's Duo has convenient, swappable drive bays to go with an external display and controls, although its new USB 3.0 model (3SR) requires a power connection.

Most RAID arrays—and all of the ones featured here—can be configured for either RAID 0 (increased performance) or RAID 1 (data redundancy).

High-throughput Thunderbolt (up to 10Gbps per channel) and USB 3.0 (up to 5Gbps) protocols are capable of powering devices, but for now, bus-powered arrays are limited to models with FireWire 800 ports.

The new (and pricey) Thunderbolt-enabled Drobo Mini has no bus-powered options (a battery back is in the works). What it does have is four 2.5-inch SATA drive bays, and a fifth mSATA bay for an SSD that Drobo's proprietary BeyondRAID controller uses as a cache to shorten read and write times.

Drobo Mini
$649, no drives included
www.drobo.com

OWC Mercury Elite Pro Dual Mini
$299, direct, 2x750GB (1.5TB)
macsales.com

Tough Tech Duo 3SR
$649, direct, 2x750GB (1.5TB)
www.wiebetech.com

DAN BRACAGLIA (OWC DRIVE)

NEWS FEED

> Computer scientist Siwei Lyu and colleagues at the State University of New York at Albany developed a set of algorithms to analyze a photo's pixel patterns and noise levels. Their methods can help detect photo manipulation and prevent fraud.

> Adobe Creative Cloud is a bit more of a deal now that Lightroom 4 is part of the package.

> Wacom's new Cintiq 24HD Touch display lets you retouch photos with your fingers as well as your stylus.

> Thirty-six of the famous 1960s Kodak Coloramas that once hung in Grand Central Terminal are up at its New York Transit Museum until November 1.

> Canon EOS 7D shooters get a bonus with the new firmware upgrade; they can now convert their RAW files right in the camera.

TOOLBOX

HATCH PAK

A new camera pack helps shooters stay cool and dry

WHAT'S IN a name? In the case of Lowepro's Photo Hatchback 16, a description of the camera compartment, which opens from the rear—thwarting thieves and making for a smooth exterior. The padded, removable gear carrier inside is small (leave your battery grip at home), but can fit most DSLRs and two smallish lenses. When you take this out, a divider folds down, transforming the bag into a traditional day pack. The back and shoulder straps are padded with a light, cushiony foam—separating your body from the bag and allowing air to flow. We used one for a few weeks and noticed the difference, whether lugging camera gear or a load of provisions for a hike.

99

Number, in millions, of mobile-phone shooters who shared their pics via social networks last year.

122

The number, in millions, of shooters expected to share that way in 2016.

SOURCE: INFOTRENDS

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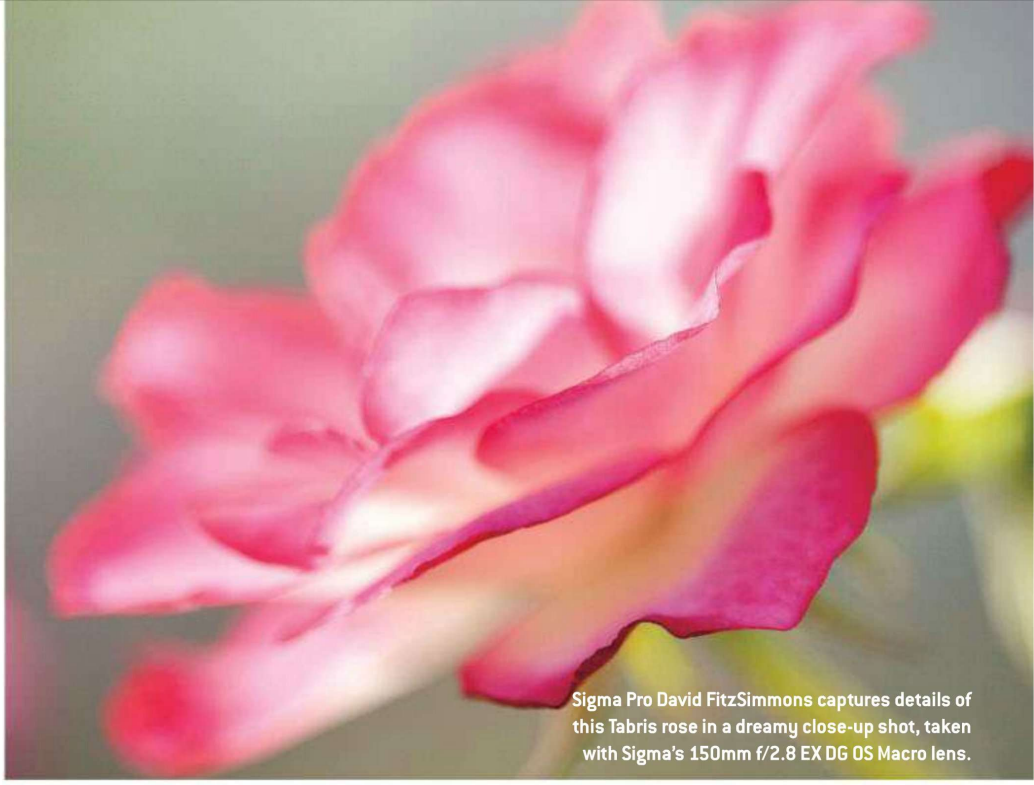
EXCLUSIVE EXCELLENCE:

5 SUPERB LENSES WITH UNIQUE POINTS OF VIEW

When it comes to creating unique high-performance lenses that expand your picture-taking horizons and enhance opportunities for creative expression, Sigma stands supreme. The quintessential optical quintet on this page all provide zoom ranges, focal lengths and aperture combinations that are available only from Sigma. And each is an optical jewel in its own right, combining cutting-edge design, meticulously crafted construction and stringent quality control to deliver outstanding performance, durability and lasting value. The five lenses in this exclusive array incorporate Hyper-Sonic Motors (HSM) for ultra-precise, virtually silent, high-speed AF. Many employ exotic ELD and SLD low-dispersion glass and FLD (fluorite equivalent) elements to achieve extraordinary sharpness, brilliance and color correction. All are made in Japan by a privately held family firm whose CEO is the founder's son, ensuring Sigma's enduring commitment to providing lenses of unsurpassed quality.



Sigma Pro David FitzSimmons captures details of this Tabris rose in a dreamy close-up shot, taken with Sigma's 150mm f/2.8 EX DG OS Macro lens.

SIGMA 150MM F/2.8 EX DG OS HSM APO MACRO

A stunning super-speed telephoto macro lens and a superb portrait lens rolled into one, this optical classic gets down to 1:1 for extreme close-ups using a Floating Internal Focusing (FIF) system that provides a non-rotating front barrel. It delivers superb image quality thanks to enhanced DG design and three SLD elements, plus beautiful bokeh in backgrounds and foregrounds at its widest apertures for breathtaking pictorial effects. OS image stabilization gives you an edge in handheld shooting in low light.

SIGMA 8-16MM F/4.5-5.6 DC HSM

This exclusive ultra-wide zoom provides coverage equivalent to an astounding 12-24mm on APS-C-format DSLRs—the perfect choice for capturing expansive vistas, "opening up" cramped interior spaces and exploring creative perspectives. It incorporates Sigma's FLD (fluorite equivalent) and aspheric elements to provide outstanding sharpness, ultra-low distortion and superb color correction, and it focuses down to 9.4 inches for breathtaking close-ups.

SIGMA 120-300MM F/2.8 EX DG OS HSM

With its large constant f/2.8 maximum aperture and extended range, this ultra-flexible telephoto zoom for full-frame and APS-C-format DSLRs lets you compose distant or close-up (to 4.9 feet) subjects quickly and easily without changing position. It incorporates Sigma's proprietary OS image stabilization giving up to a four-stop anti-shake advantage, employs SLD and FLD elements for outstanding color correction and image quality, and features internal focus and zoom, plus splash-proof construction.

SIGMA 150-500MM F/5-6.3 DG OS HSM APO

This affordable ultra-telephoto zoom is ideal for nature, wildlife and sports. It covers full-frame and provides an astonishing 225-750mm equivalent range on APS-C-format DSLRs. Its APO design uses three SLD elements for superb color correction and image quality, and its OS stabilization system gives up to a four-stop anti-shake advantage in handheld shooting. A rear focus system ensures quick manual focus and a non-rotating front barrel, and it accepts Sigma EX 1.4X and 2X tele-converters to extend its reach.

SIGMA 300-800MM F/5.6 EX DG APO IF HSM

An astonishing achievement in lens design, this impressive extreme telephoto zoom is the only one of its kind with a large f/5.6 constant maximum aperture at all focal lengths, making it the savvy pro's choice for capturing unique nature, outdoor and sports images in any light. Its enhanced DG APO lens design uses two ELD glass elements to deliver superb sharpness, correction and color balance, and its rotating tripod mount can be easily detached. Sigma EX 1.4X and 2X tele-converters dramatically extend its range.

SIGMA

For more information, visit **sigmaphoto.com**

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PHOTO CHALLENGE

SUR THING

Light painting on the beach in the blue hour

"I COULD see that the moon was going to drop right into the fog, so I began running," says Matt Walker, a 46-year-old horticulturalist from Campbell, CA. "In minutes the moon was gone, and there I was—4:40 a.m., on Pfeiffer Beach, with a failed plan."

So he got creative. Faced with Big Sur's iconic rock, but no heavenly body to light it, he employed a technique he had picked up from a fellow shooter at a fireworks show: Light painting.

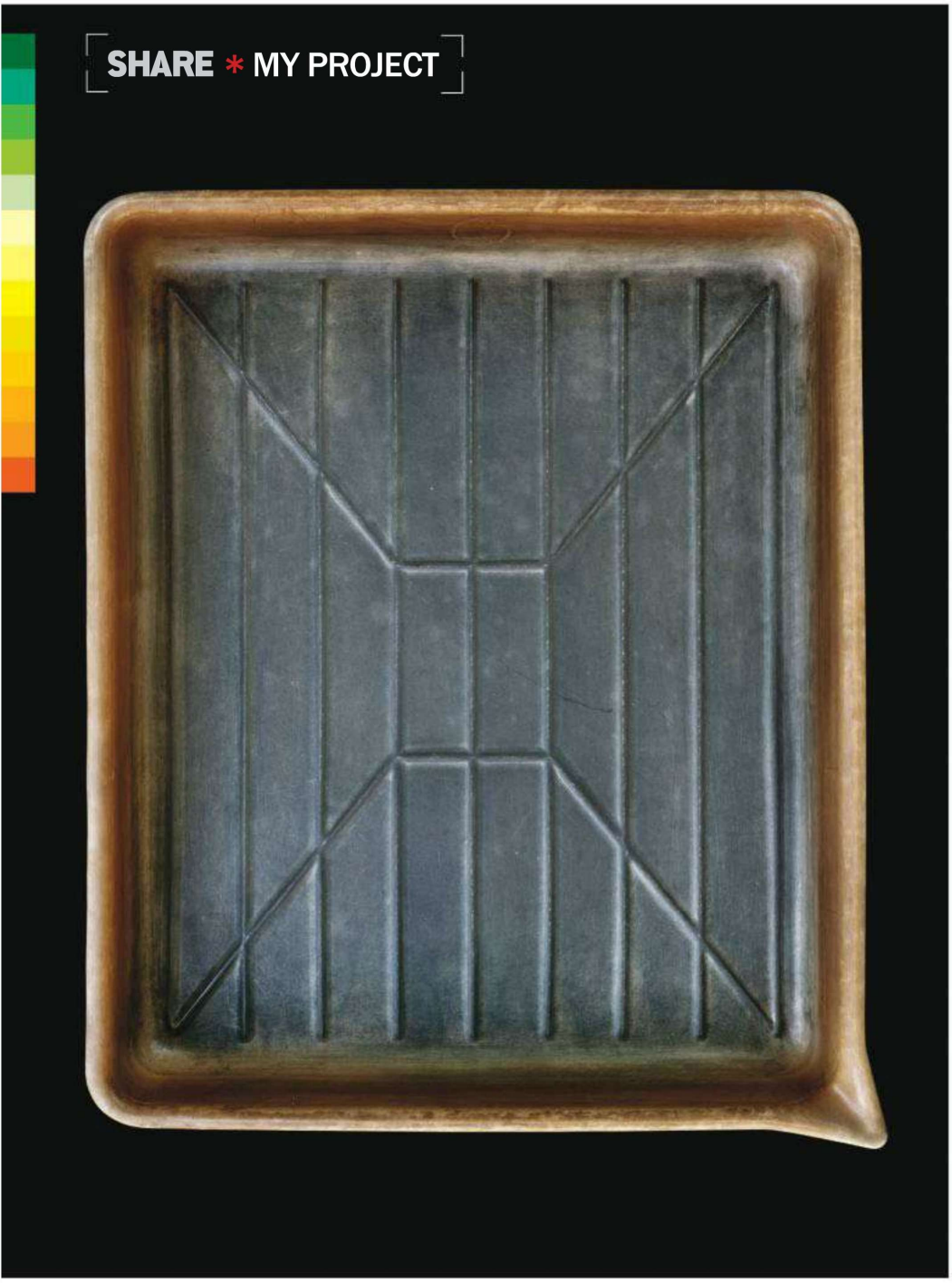
With a 14–24mm f/2.8G Nikkor ED lens on his tripod-mounted Nikon D3, Walker opened the shutter (set to Bulb) remotely and waved his flashlight like a conductor, experimenting with each exposure. For this one—68.1 sec at f/11, ISO 400, +2.33 EV—he trained the light on the rock's natural opening, answering our call to shoot in the blue hour.

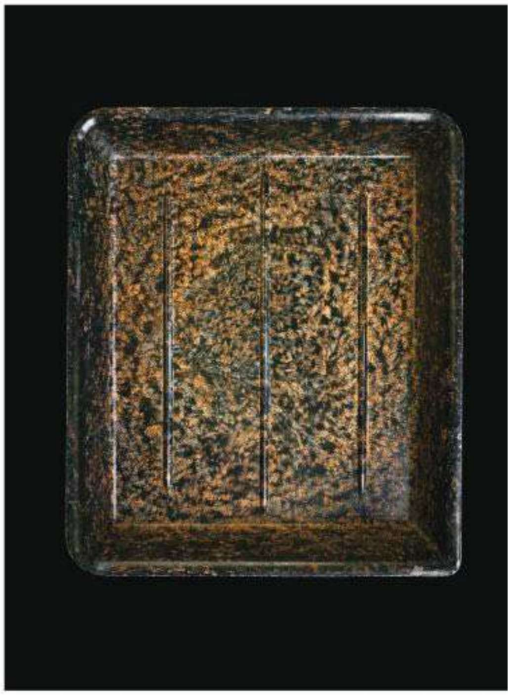
—Matthew Ismael Ruiz

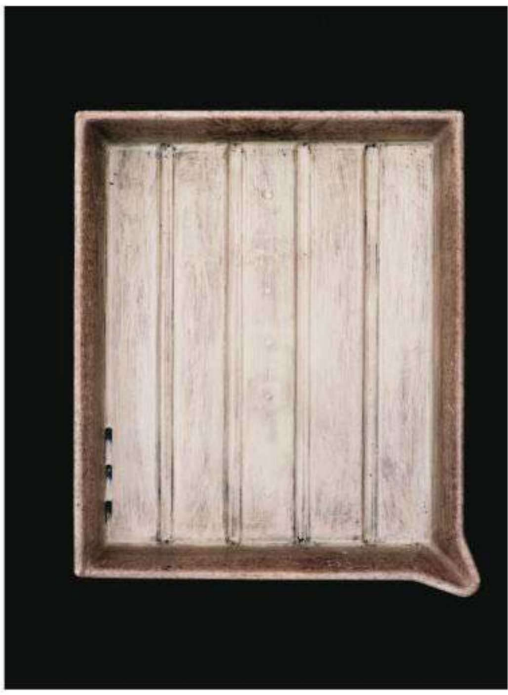
Walker (flickr.com/photos/rootswalker) used contrast, lighten, and polarizer brushes is Apple's Aperture 3.

MATT WALKER

NEXT PHOTO CHALLENGE **In Creative Thinking (p.39), Sara Lando shows how she makes self-portraits to express emotions. Take an expressive self-portrait by Sept. 30 to win $100 and your photo here. Rules are at PopPhoto.com/contests.**







Post Process

John Cyr's "history" of printmaking

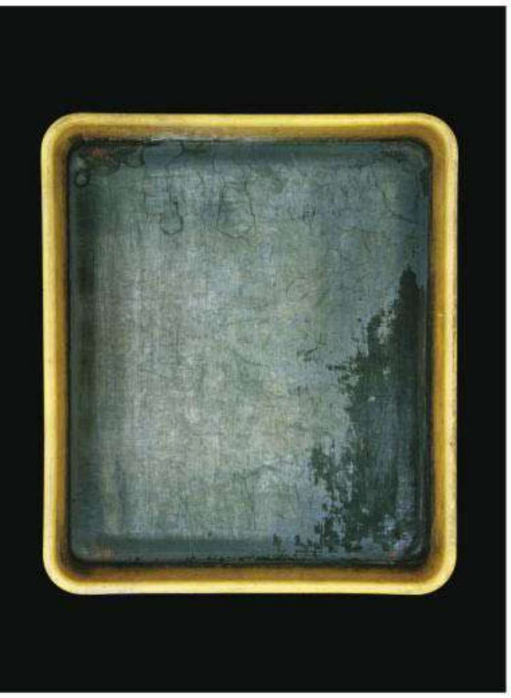
WHEN JOHN CYR began his series "Developing Trays" in 2010, it was far from a nostalgia project. The 31-year-old photographer has been working in printing since 2003, and while many film clients have since switched to digital, his own tray was still in operation.

While pursuing an MFA from the School of Visual Arts in New York, his search for a thesis project led him back home to his own darkroom. Capturing the objects within led him to a new idea. "I like the idea of the image as a singular object, which is what attracts me to printing," he explains. "A tray is an object that has helped make other memorable objects, and deserves to be captured on its own."

He began seeking out photographers with a memorable history in film, as well as relatives

John Cyr is a photographer and printer; he teaches at the International Center of Photography in New York.

JOHN CYR, COURTESY OF THE CATHERINE EDELMAN GALLERY, CHICAGO (7)



Trays used by (clockwise from left) Ansel Adams, George Eastman House, Sally Mann, NPPA, Barbara Mensch, Larry Fink. Visit johncyrphotography.com.

of well-known icons—like Ansel Adams' son. When Emmet Gowin invited him to visit his studio, he became one of his first subjects, and the project was born.

"First we'd sit and chat a bit about the project, and often about the experience of going from analog to digital," Cyr explains. Many were no longer regularly using their darkroom trays—others still used them, if only once in awhile. Ansel Adams' still sits in a well-preserved darkroom, and Aaron Siskind's last assistant uses his as a carrier for yarn.

Cyr positions the trays as close as possible to available light, and shoots with a 4x5 Osaka view camera. Sometimes he uses a single strobe. Later, he scans the Kodak 160NC images on an Imacon scanner, printing them on inkjet. "The process reminded me that we're lucky to have all this at our disposal."

His thesis complete, he continues to shoot; with 72 trays captured, he considers the project ongoing. But it's the history, rather than the silver-gelatin, that fascinates him: "Digital equipment today can be rendered obsolete within a few years, but these trays have lasted photographers throughout their careers in print," he explains.

It's what makes them such compelling objects: a history of prints, in layers of silver lining.

—Lori Fredrickson

ADAM PACE

Birth Partners

A pair of portrait shooters on their emerging business

Mothers Melanie Pace and Kelly Smith of Cincinnati, OH have turned their maternal instincts and photography skills into a business shooting childbirth. See their work at www.cincinnatibirthphotography.com.

How did you get started in this?

Smith: We both have BFAs in photography and have separate businesses with our husbands, shooting weddings and portraits. We both still do other assignments; we only take three or four births a month.

Pace: We are very much into birthing—there was a lot of talk about our birth photography amongst our community of doulas [labor coaches], midwives, childbirth instructors and like-minded mamas—everyone knows each other. We were already shooting our friends' births; it just came together.

Is there a lot of demand?

Smith: We get a lot more inquiries than we can take on. The doulas in our area refer work to us, as does our ob/gyn.

Pace: We've started getting inquiries from photographers from all over who want to start their own birth photography businesses—we seem to be getting as many inquiries from photographers as from moms.

Why has it become so popular?

Pace: I think women have realized, "This is just as big of a moment in my life as my wedding was—if not bigger." When Kelly photographed my birth, I was so involved in labor that I had no idea what was going on around me, but I have these images that tell the story.

Smith: From a photographer's standpoint, they realize that they can create a niche—they have the skills and equipment, and that's a good way to advertise to people why they should hire a photographer. It frees up the labor partner so they can fully be there for the mom.

How does the process work?

Pace: Moms schedule their consultations when they are about four months along. We are on call every day of the week around their due date, because a baby can come whenever it wants to. Once the mom is around 6 centimeters, one of us heads out. We take two cameras and multiple lenses so we can get as much as possible right as the baby arrives. We stay for the first breast feeding, the family's arrival, and a few newborn portraits.

How difficult does it get?

Pace: Last year I had a labor that lasted 36 hours, and I was there for all of it. The birth was an hour away, so I couldn't leave—they kept saying it could happen at any time, but there were so many points where she was pushing and then just fell asleep for two hours. I was seven months pregnant myself, so the nurses were also trying to take care of me. That birth ended up in a C-section, so I never got to shoot the actual birth.

What is your most-used gear?

Smith: We both use a Canon EOS 5D Mark II, and we both have a 35mm f/1.4, 50mm f/1.2, and 100mm macro lens. We always have flashes in our bags, but we rarely use them, and only after the baby is born. We shoot usually in low light, like candle light for home births, or in bad hospital light, but our cameras are good at high ISOs, and we convert a lot of images to black-and-white, which helps.

Pace: I also carry a white-balance filter for flourescent lighting.

What do you like most about doing this work?

Smith: We love the raw emotion. It's different than what everyone else is doing and so unpredictable.

Pace: It's not about the extra money! We are on call 24/7 like a doctor, willing to get up at 3 a.m. to attend a birth. It's a passion of ours—it's like our own baby being delivered.

—Interviewed by Kathleen Davis

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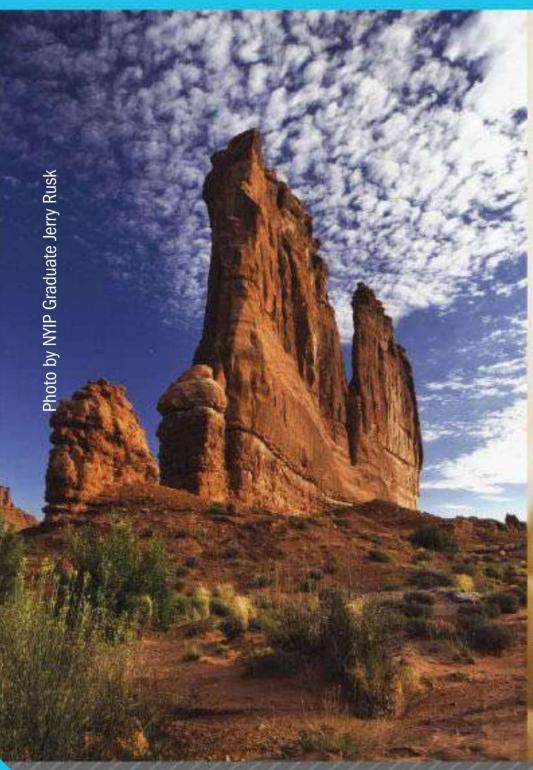
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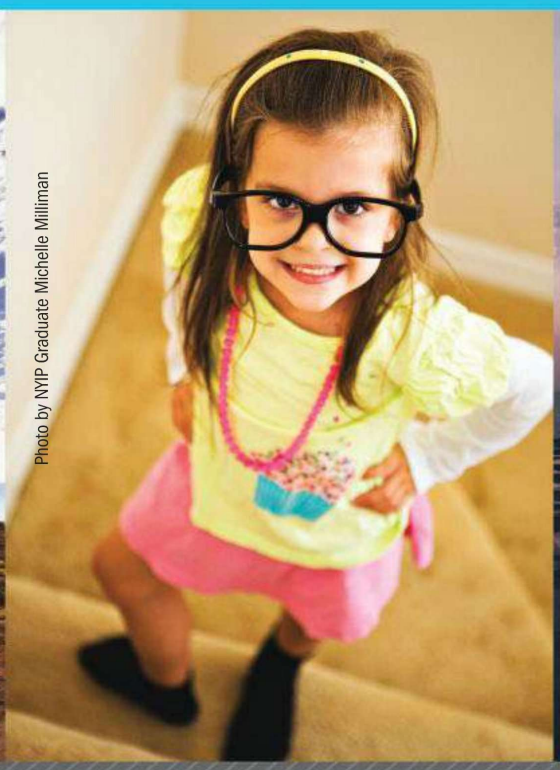
Photo by NYIP Graduate Michelle Milliman

Photo by NYIP Graduate Eric Salsberry

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Wildlife Tip

GUIDE TO BETTER NATURE PHOTOS

10 Rules To Break

Text and photos by Richard Bernabe and Jan Hurst

3 Customize your white balance before every shot.

4 For maximum sharpness, focus one-third of the way into a scene.

As professional nature photographers, we've interacted with thousands of other shooters during workshops, presentations, and random encounters in the field. Over the years, we've heard certain guidelines, maxims, and rules repeated over and over again—and repeated a few ourselves, before stopping to think. Some of these have merit, yet many do not. Here are 10 of our favorite "rules" that have little or no basis in reality. Go ahead and break them.

1 A good exposure has a bell-curve-shaped histogram.

2 Shoot in manual for better exposure control.

5 Always shoot with the sun at your back.

DAN BRACAGLIA

In Rule No. 2 of "10 Rules to Break" (July 2012), you state that "shutter speed is usually crucial" (versus aperture priority) in wildlife photography. I use aperture-priority for most of my sea otter photography, to control the depth of field with my telephoto lens. On my Nikon D7000, I use Auto ISO and set a minimum shutter speed: 1/500 sec for a sleeping otter or 1/1000 sec for an active one. This way, if there is more available light, the camera automatically increases my shutter speed to improve my stop action. I set my maximum sensitivity to ISO 1600 to keep the noise manageable.

Michael Yang
San Francisco, CA

YOU CRITICIZED the lack of a pop-up flash in the Canon EOS 5D Mark III (July 2012). This was a major factor in my decision to buy the Mark II. Many museums do not allow photography with a flash or tripod. Some (e.g., the Kunsthistorisches Museum in Vienna) will not let you take along a camera with a pop-up flash, regardless of make or model.

Jurgen Heinemann
Rock Hill, SC

IN YOUR review of the Canon EOS 5D Mark III: "What's Not [Hot]: No pop-up flash." Seriously? It's a professional camera. Pros don't want a pop-up flash. Come up with something halfway relevant: Costs more than the Mark II did at launch, no RAW video, no 4K video, no HDR video, not as weatherproof as it could be, no integrated flash trigger, etc.

Ryan Kelly
Stockton, CA

EDITOR'S NOTE: *When set to less than full output, pop-up units are great for a touch of fill light in outdoor portraits and for getting catchlights in*

eyes. A pop-up flash can also be used to wirelessly trigger multiple off-camera flash units—you know, as an integrated flash trigger.

I ENJOYED your article on "Aerial Aces" (July 2012), but the last time I got my camera out during take-off, I was informed by the flight attendant that I couldn't use my camera until we had gotten to an approved altitude. She said anything with a battery couldn't be used during take-off. This sounded like the usual airline nonsense, but your article would have been even more helpful if it included the actual FAA rule on when you can take photos (or, heaven forbid, use something with a battery) during a commercial flight. Thanks, and keep up the fine work!

Kyrce Culbertson
Rosemary Beach, FL

EDITOR'S NOTE: *In-flight rules regarding cameras on commercial flights vary from airline to airline: Emily Gibson, an aviation safety inspector with the U.S. Federal Aviation Administration (FAA), suggests contacting airlines individually for their specific policies. For example, JetBlue and United both allow electronic camera use, but only once the plane reaches an altitude of 10,000 feet.*

THE LETTER from L. R. Praus (Letters, August 2012) re: the "Water World" Backstory deserves a better response than your Editor's Note provided. I doubt that your readers are accusing you of making a mistake. Rather, we would all appreciate an explanation so we can better understand what appears to be incorrect. Consider it a teaching opportunity. Don't dis your readers. We read Pop Photo to learn photography.

Marty Brown
Kensington, CT

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THEY CAN speed up your camera's autofocus, increase its burst capacity, and make evaluative metering smarter. They can even add features that the camera didn't have. And they're free.

They are called firmware updates, and they're something that even experienced photographers can be skittish about installing. Here's a rundown.

Firmware is, essentially, the operating system of your camera It's "firm" in that it's meant to remain (mostly) unchanged.

But a firmware update isn't necessarily a magic bullet for supercharging your camera. The majority of updates are mundane glitch fixes: correction to a wacky LCD display item, making that sleep mode less sleepy, that sort of thing. Still, some of them are doozies—the most recent update for the Canon EOS 7D, for example, adds, among other things, in-camera RAW processing. You can find news of recent updates at PopPhoto.com/category/tags/firmware.

Firmware updates typically work this way: From the camera maker's website, you download the update to your computer. You then copy the firmware onto a blank, formatted memory card, which you then insert in your camera. At this point, the procedure varies by camera maker. Some give you directions in the camera's menus; with others, it's more of a secret handshake. So follow the manufacturer's instructions to the letter.

If your camera is new(ish), it may already have the latest firmware version. You can find your camera's version buried in its menus, usually in the set-up section. The table at right tells you where to find update downloads.

CANON www.usa.canon.com/cusa/support/consumer

WHAT TO DO Select product type; select product family; select your camera model; click on drivers and software.

LEICA us.leica-camera.com/service/downloads/

WHAT TO DO Choose category; choose your camera model; scroll down to firmware update, if any.

NIKON support.nikonusa.com/app/answers/detail/a_id/13783

WHAT TO DO Scroll down to camera model and click on firmware link, if any.

OLYMPUS www.olympusamerica.com/cpg_section/cpg_support.asp?id=1

WHAT TO DO Select camera type; select your camera model; click on software downloads.

PANASONIC panasonic.jp/support/global/cs/dsc/download/index.html

WHAT TO DO Scroll down to your camera's firmware link, if any.

PENTAX www.pentaximaging.com/support/download-details

WHAT TO DO Select cameras; select type of cameras; select your model; scroll down to firmware link, if any.

SAMSUNG www.samsung.com/us/support/downloads/

WHAT TO DO Select product type; select type of camera; select your camera model; click on get downloads and click on firmware tab, if any.

SIGMA www.sigmaphoto.com/downloads

WHAT TO DO Scroll down to your camera model and click on firmware update, if any.

SONY esupport.sony.com/US/p/select-system.pl?

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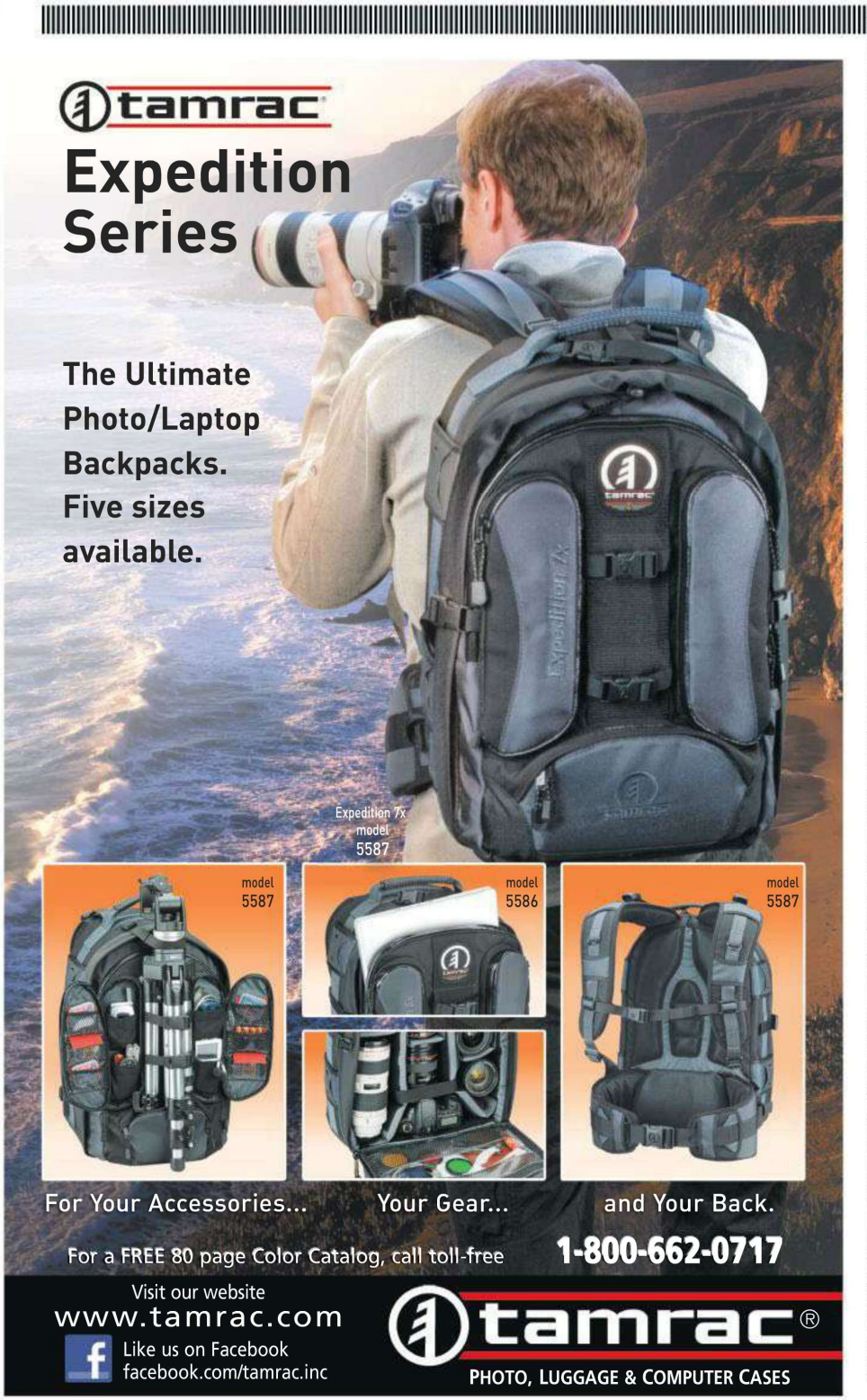
Q&A

RAW Menu

Q Can you suggest a good HDR program that will accept a single RAW file for processing? The ones I'm familiar with seem to accept only TIFFs, and they need multiple files to create HDR images.

Tom Newcomb
Stony Point, NY

A *No program will do what you want. For good dynamic range from a single file, just use RAW conversion software (we highly recommend Adobe Photoshop Lightroom 4) to draw out a maximum range of tones from your images. For making HDRs from multiple RAW files, a good choices is Adobe Photoshop HDR Pro, as are Unified Color HDR Express and HDR Expose. For a good explanation of why a RAW file works best for HDR, go to www.unifiedcolor.com/blog and search for John Omvik's HDR Tip 6.*



Q&A

Backup...Repeat

Q In your August, 2012 News Feed, you "recommend using external storage for backup only, never for long-term storage." My external hard drives are full of my long-term storage. What should I do instead?

David Goldenberg
Madison, WI

A *The main rule for storage and backup is redundancy. Data usually gets lost because it's stored in only one place—usually a hard drive connected to a computer. External hard drives are okay for backup as long as they are used for backing up stuff that is also kept elsewhere. Hard drives fail—it's their nature; they contain lots of moving parts that eventually wear out. RAID, a system of duplicating data on multiple drives within a single enclosure, was developed to mitigate this. So you may want to choose a RAID array (see page 18 for some portable ones) instead of a single external drive.*

Some commercial photographers we know keep buying bigger drives and larger RAID systems, copy the data from their filled-up drives to the new RAIDs, and keep the old ones in storage for extra security.

For your most important images, we highly recommend off-site backup using a cloud-based service such as Google Drive or Microsoft SkyDrive. These have other bonuses, too, such as allowing you to access your images wherever you go.

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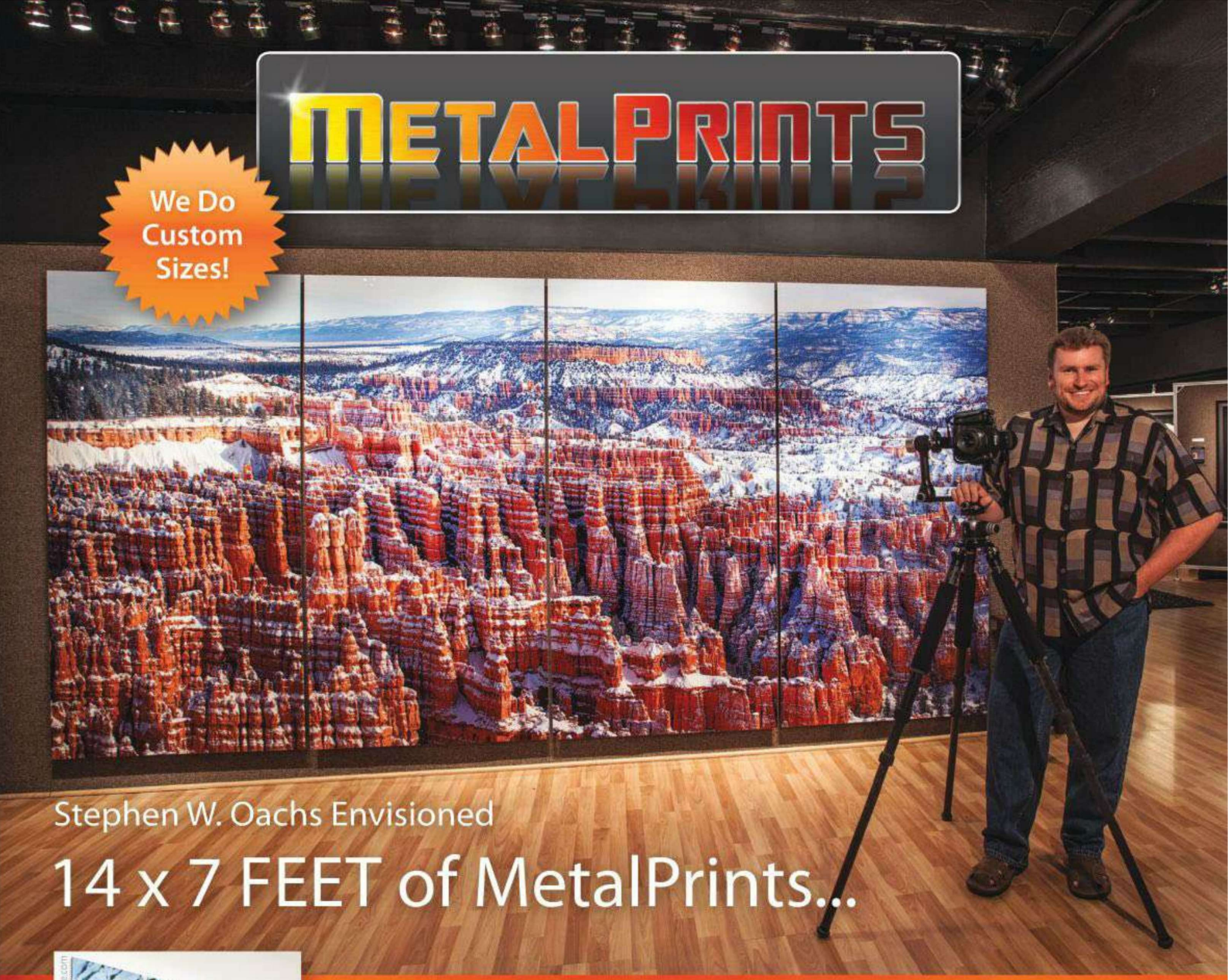
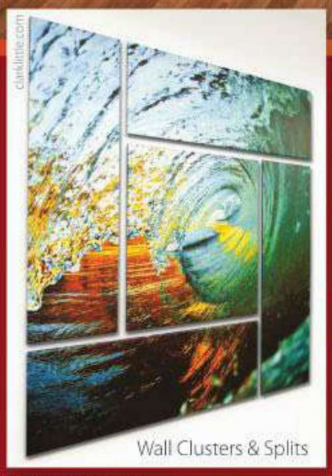


Stephen W. Oachs Envisioned

14 x 7 FEET of MetalPrints...



"And here we have it -- a quadtych of my 551 mega-pixel multi-row panoramic of Bryce Canyon from the winter of 2010. This print is 14 x 7 feet and there is NO pixelation. If you stand even a few inches away it's perfectly clear and sharp. The resolution on this is stunning. My good friends at Bay Photo Lab spent the last few days creating this high gloss print on metal for my gallery at Aperture Academy."

- Stephen W. Oachs, apertureacademy.com

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Get Soaked

This month's winners dive headfirst into their fantasies

MONTHLY PHOTO CONTEST

Want to enter? Get the official rules and upload your images at PopPhoto.com/contests.

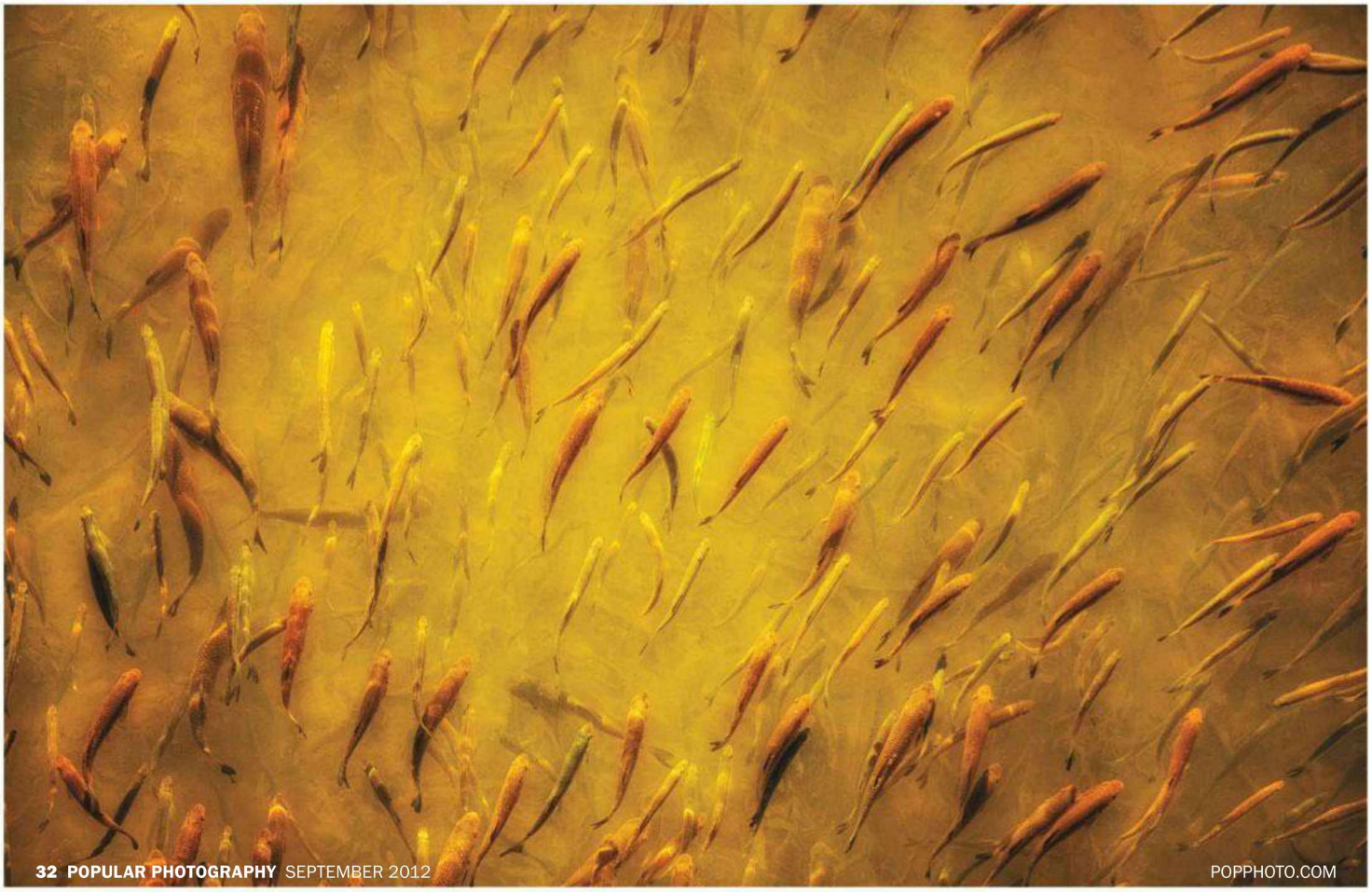
3rd Place $100 Prize STEPHANIE BRACCIANO, 29, PHOTOGRAPHER, MONROE, MI

It was a cloudy, wet day on Tybee Island, GA. I love birds—I always feel the desire to catch and cage a bird to make it mine. So I set up a tripod and spent a couple hours chasing seagulls. I had a crowd of tourists observing me as I practically ran in circles trying to make the gulls fly upward. The shoot was time-consuming, but I was incredibly satisfied with the results.

TECH INFO: Canon EOS 5D with 24–105mm f/4L Canon EF lens; 1/2000 sec at f/7.1, ISO 400. Saturation adjusted in Adobe Photoshop CS4.

2nd Place $200 Prize DUSICA PARIPOVIC, 26, TEACHER, PRIJEDOR, BOSNIA AND HERZEGOVINA

I find the underwater world magical. I wanted to capture that magic—without actually going underwater. This was shot from a bridge where people come to feed the fish. I shot handheld, straight down, luring them with pieces of bread. It was challenging to get the water without ripples. It was freezing outside, and I had to come several times to get it, but it was worth it. **TECH INFO:** Nikon D5000 with 55–200mm f/4–5.6 Nikkor VR lens; 1/160 sec at f/4.8, ISO 100. Contrast and saturation adjusted in Adobe Photoshop CS5.



A Great New 24-70mm F/2.8 Zoom with the Built-In VC Edge!

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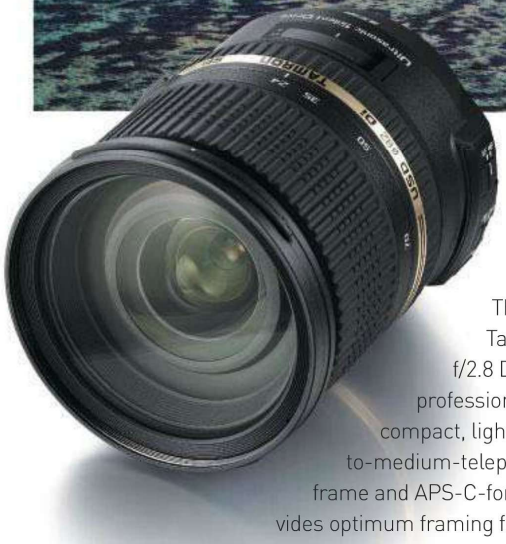

"Tamron's VC system really came through for me. . .I'm absolutely delighted with it, and it's an amazing value."

The exceptional new Tamron SP 24-70mm f/2.8 Di VC -USD is a professional caliber high speed, compact, lightweight wide-angle-to-medium-telephoto zoom for full-frame and APS-C-format DSLRs that provides optimum framing flexibility for shooting events, portraits, travel, video and life on the go. It delivers unsurpassed image quality thanks to a cutting-edge optical design that includes three LD (Low Dispersion) elements, three Glass Molded aspheric elements, one hybrid aspheric element, and two XR (Extra Refractive index) elements for unsurpassed color brilliance and sharpness over its entire range. Its wide constant f/2.8 maximum aperture yields striking pictorial effects, beautiful bokeh thanks in part to nine rounded aperture blades, and enhanced low-light capability, and it features moisture-resistant construction, and an ultrasonic silent drive (USD) motor for swift, silent, precise AF. The clincher: It's the only lens in its class with advanced image stabilization—the latest, compact, lightweight Moving Coil version of Tamron's acclaimed tri-axial VC (Vibration Compensation) system that reduces the size and weight of the lens while providing up to a four-stop anti-shake advantage when shooting handheld at slow shutter speeds.

What's it like to shoot with this remarkable lens? We asked Jodi Friedman, a leading imaging pro who just took Tamron's latest 24-70mm on a weeklong trip to Australia. Friedman, based near Detroit, Michigan, is a dedicated photographer and owner of a photography post-processing company with more than 120,000 followers on Facebook (mcpactions.com). As a seasoned pro operating at the pixel level where the rubber meets the road, she's a bona fide expert on image quality.

"At one point I was in a fast-moving helicopter overlooking the Great Barrier Reef in Queensland, Australia, and holding my DSLR steady was impossible. Conveniently, Tamron's VC system really came through, enabling me to get crisp shots of the spectacular scenery below with excellent detail and rich color saturation. The AF is extremely fast and accurate, and it's so light, compact and well balanced it became my go-to lens for general shooting. This lens is razor sharp at the point of focus, and at f/2.8 I captured exquisitely detailed images of birds with amazingly beautiful bokeh as the background falls away. I'll definitely be using this lens extensively in my personal and professional work. I'm absolutely delighted with it, and it's an amazing value."

For more information, visit www.tamron-usa.com

TAMRON

1st Place
$300 Prize

CAMERON SMITH, 24, PHOTOGRAPHER, SAN DIEGO, CA

This image was my favorite from a series capturing land sports underwater. Water eats up light so quickly, you need a lot of light to even think about lighting a subject at the bottom of a pool. I lined the bottom of the pool with a white backdrop to bounce the light back to the subject, and placed black backdrop behind him. A 100-foot sync cord connected my housing to all the lights on the surface, and an assistant held an underwater flashlight to fill the subject's face.

TECH INFO: Canon EOS 5D Mark II with 15mm f/2.8 Canon EF Fisheye lens in Del Mar housing; 1/125 at f/10, ISO 640. Curves Layer masking, color correcting, and sharpening in Adobe Photoshop CS5 and Lightroom 4.

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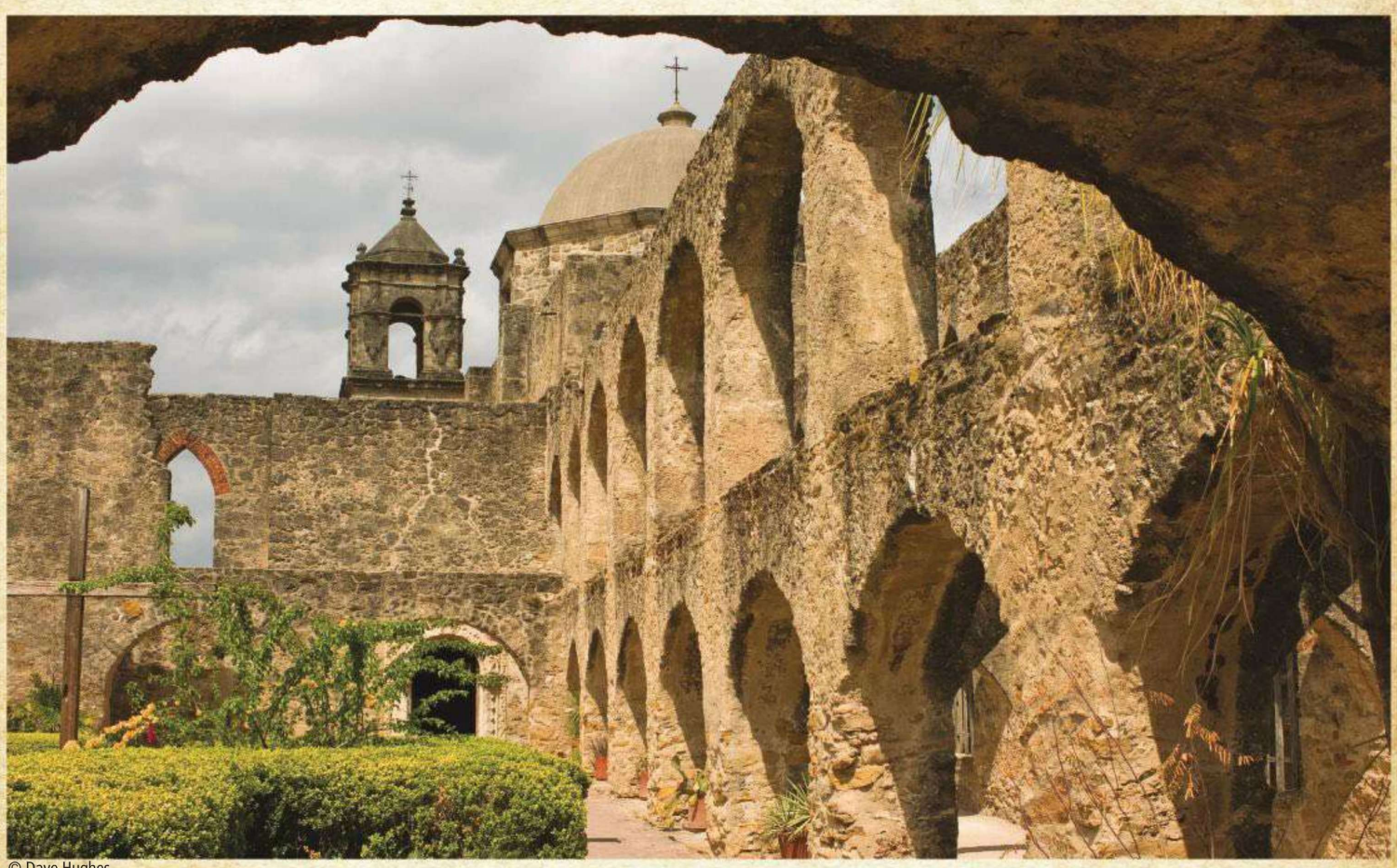

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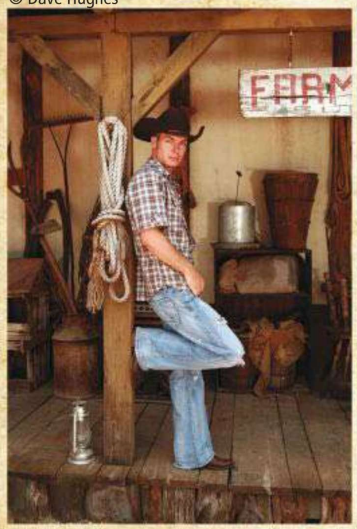

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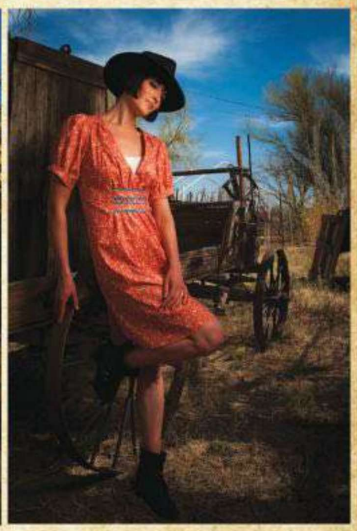

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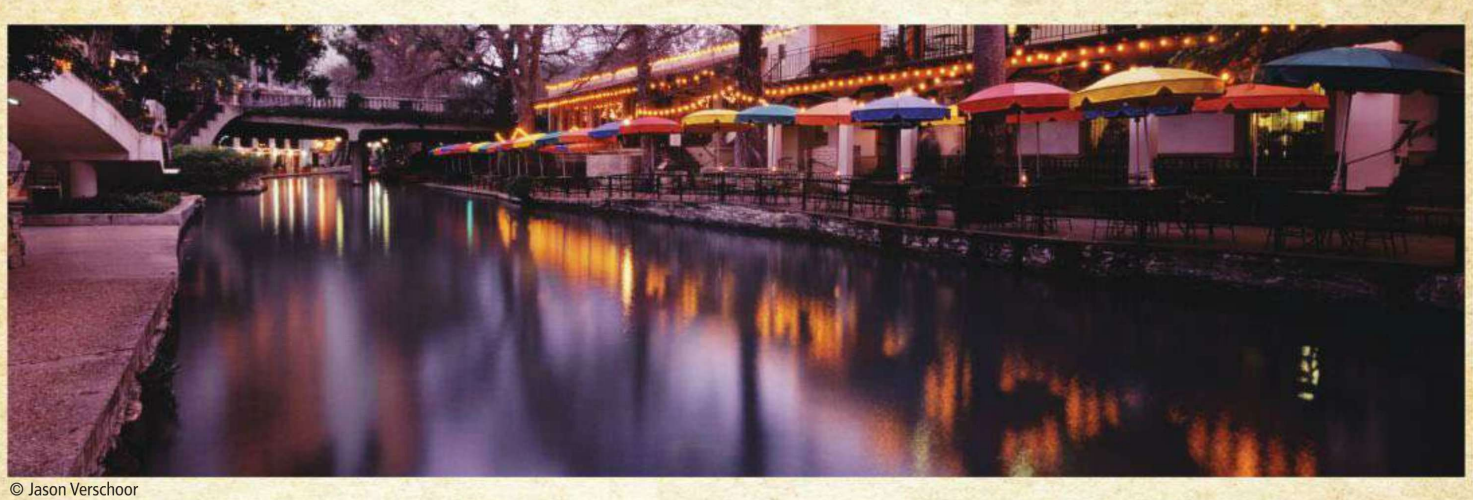

© Jason Verschoor

Pack your camera gear and Speedlights and join the Mentor Series as we trek south to light up San Antonio, Texas. This historic locale will provide the perfect backdrop in which to learn the rewards of using light to create an intentional effect in your photos, as well as capture the spirit of this Lone Star destination. Allow Nikon professional photographers and illumination gurus David Tejada, Michael Clark and Dave Black to simplify techniques and help you address lighting scenarios that will convey a desired atmosphere, while capturing unique images in both controlled and spontaneous shooting situations.

Light is the essence of any photograph, and it is important to understand how to control your light and to explore which lighting is best suited to subject and scene. Take your passion for photography to the next level on this trek by practicing the Mentor Series hands-on approach and walking away with in-depth knowledge of your Speedlights and how they can work for you.

Utilize the rugged natural beauty and "days gone by" ambiance at the Enchanted Springs Ranch, a working cattle and horse ranch that boasts an authentic Old West town. This gorgeous stretch of the Texas Hill Country landscape is rich with history of the passage of Spanish and American explorers. Here you will learn the concept of lighting "on location" and have an opportunity to direct professional models, such as gunfighters, stagecoach drivers and saloon girls, and practice using off-camera flash. Your mentors will assist you in assessing a particular shooting situation and finding the best angles. You will learn to interpret any existing light source and understand how to use your Speedlight (or more than one) to render the best image.

We will continue our exploration of how luminosity can shape the mood and color of the portraits you create at the San Antonio Botanical Garden. The garden's stunning floral displays and serene pathways will provide a backdrop for your lighting education worthy of note. Further develop your skills at one of the area's missions as you consider the ambient light and learn to frame the Spanish architecture against a blazing blue sky.

You can't miss with mentors Dave Black, Michael Clark and David Tejada, industry leaders when it comes to using Speedlights in their stylized images. During this trek you will bring to light the best in your photography and round up images to treasure for years to come. Sign up today!

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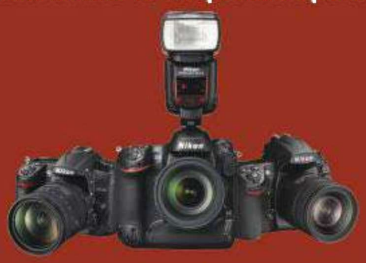

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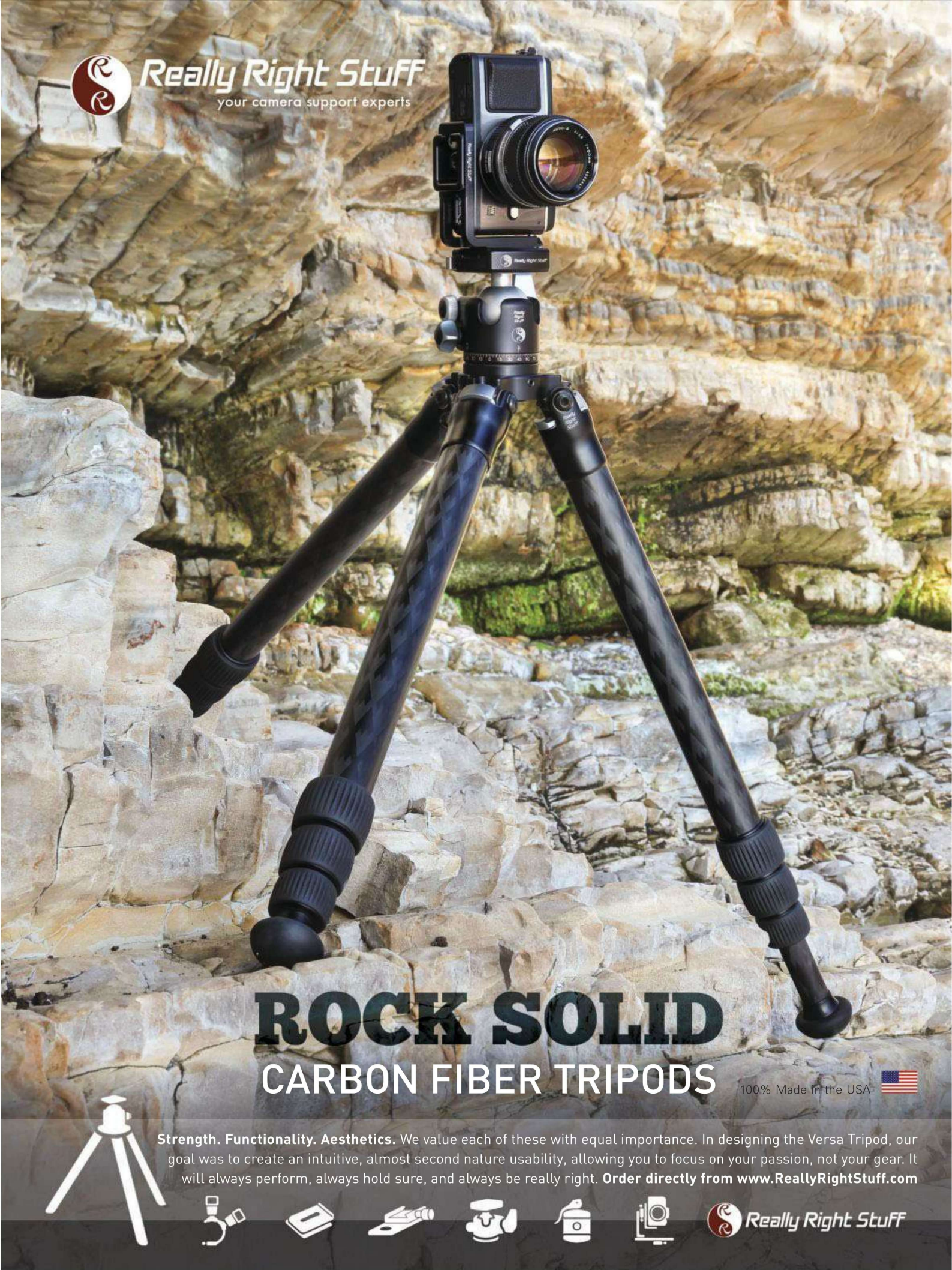
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HOW

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CREATIVE THINKING

CLAY CURE

SARA LANDO

A camera can be more than a purely visual tool

SARA LANDO has developed a talent for photographically compensating for life's ups and downs. In fact, the Italian photographer, based in the Veneto region in Bassano del Grappa (saralando.com), got her start in photography by making self-portraits that reflected on her life. "I did it in private as a cheap form of therapy. It was a secret that I didn't want other people to see," she says.

Lando used a Canon EOS 40D and 50mm f/1.4 Canon EF lens; 1/100 sec at f/2.8, ISO 125.

Several years ago, Lando injured her wrist and was given a medicinal clay to reduce the swelling. Twice a day, she made mud packs and applied them to her arm, waiting half an hour for the mud to dry and harden completely. Of course it inspired

her to create a self-portrait. She first imagined a full-body shot, but she didn't have enough mud, so a headshot had to do.

Before shooting, Lando realized that the clay had a greenish tint she didn't care for; plus, the color of any exposed skin contrasted awkwardly with the mud. A black-and-white image would be the best way to fully achieve the striking effect the photographer envisioned.

"I knew what I wanted: a neutral expression, eyes right into the lens, with a gray face fading into a gray wall, and the cracked, hardened mud on my face," she says. "But I also wanted to take the pictures of the wet clay becoming dry. In the end, I liked those better."

On an overcast day, she shot the self-portrait on a balcony, using a plaster wall to add a subtle texture to the background. She didn't have a tripod, so she just stacked some books on a chair and set her Canon EOS 40D with a 50mm f/1.4 EF lens on top.

With the cloud-shrouded sun behind her, Lando placed fabric on the back of the chair as a bounce-card. "The catchlight is weird. From very close, you can see the chair, cloth, and camera strap hanging from the chair."

The photographer exposed and focused manually, making small adjustments along the way. After 28 frames, the mud began to fall off and she knew it was time to stop.

"Many people have commented on the fact that there is a sort of sadness in the picture," Lando says. "In fact, my rabbit, who had been my pet for 11 years, had just died. So, yeah, there is a sadness, I guess. As I have said, I take pictures as a form of therapy."

—Laurence Chen

Smoky

Sky detail tells a story

MARIO BUCOLO

Mario Bucolo was a little more than four miles southwest of Mount Etna when he captured this image with a tripod-steadied Sony Alpha 850 and 70–200mm f/2.8 Tamron lens; 13 sec at f/5.6, ISO 200.

A SPECTACULAR nighttime eruption of Mount Etna was a great photo op for Mario Bucolo, a pro photographer based in Catania, Sicily, near to the famously cranky volcano.

But the darkness of the sky rendered the huge plume of smoke nearly invisible. The trick was to separate the smoke from the sky tones without making either look phonied up.

We converted Bucolo's original RAW file in Adobe Camera Raw, increasing the overall exposure and adding global contrast using ACR's Basic sliders. We then brought the image into Adobe Photoshop CS6 to use Curves' Targeted Adjustment Tool to lighten the smoke and darken the sky. Time fixing: 15 minutes.

You can see many more of this photographer's images at mariobucolo.info.

—Dan Richards and Debbie Grossman

DID YOU KNOW?

HOW LENS STEPPING MOTORS WORK

CANON RECENTLY unveiled lenses with stepping motors optimized for video. Identified as STM lenses, they're well-suited to the contrast-detection technology used for autofocus in video modes, which requires continuous sampling of the image sensor. With each sampling, stepping motors nudge lens elements toward sharpness. (Conversely, phase-detection AF—used for still capture—drives lens elements after a single reading.) Stepping motors can deal with the continual stopping and starting of contrast-detection AF more resiliently, quickly, and quietly than conventional AF motors, whose design causes them to struggle with the task. You can hear this struggle when a lens emits a stuttering sound as it tries to autofocus in live view.

The all new Sunpak DigiFlash 3000.

A brighter idea for your DSLR camera.

The all new Sunpak DigiFlash for DSLR cameras offers all the power you need with the features professional photographers demand. With complete TTL compatibility for Canon or Nikon DSLR cameras, the DigiFlash 3000 is perfect for portraits, groups, sporting events and stage productions. With more flash power than your DSLR's built-in flash, you can now capture spectacular shots using longer zoom lenses, with stunning results. And no more running out of flash power when you need it.

The DigiFlash 3000 is packed with professional features, such as a bounce and swivel head, providing the ultimate in lighting control and creativity. To customize flash coverage, its built-in manual zoom head matches any 18 mm to 70 mm DSLR lens. And with a low light autofocus assist, you won't miss another shot in the dark.

Big on power and high on features, the DigiFlash 3000 delivers what you need at a fraction of the price of a comparable camera-brand flash.

For more info on the Sunpak DigiFlash 3000, go to: sunpak.com/DF3000.

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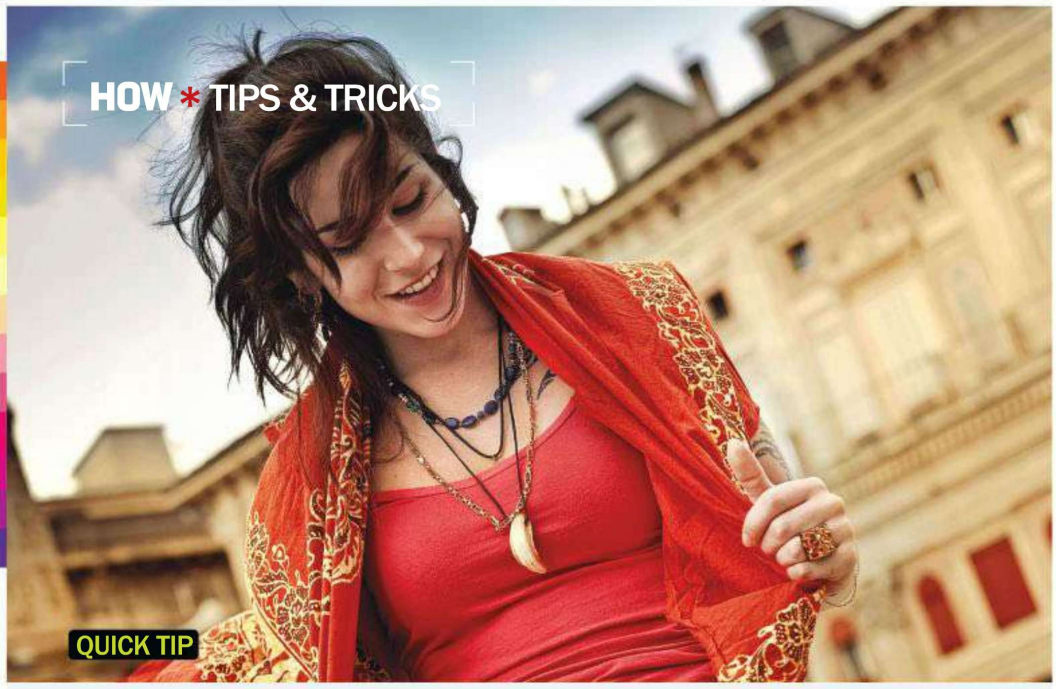


QUICK TIP

Fun City

Add life to your people pix

PHOTOGRAPHER Francesca Sara Cauli of Bologna, Italy, says that it's easy to make fun, upbeat portraits: Just hang out with fun, upbeat people.

We know that's not always possible. Luckily, her portrait of Alma Gitanna here exemplifies other techniques for energizing your people pictures. Here are a few:

• Tilt the camera to throw the horizon line off-kilter. This can add a serendipitous kick.

• Shoot spontaneously, if not literally from the hip. As Cauli puts it: "My job is to be ready for every smile, expression, or colorful pose or movement when they occur naturally. If I try to force such moments, they never seem to happen."

• Ask your subject to wear colorful clothing, if possible. "I asked Alma to wear bright red to underline her explosive personality," says Cauli.

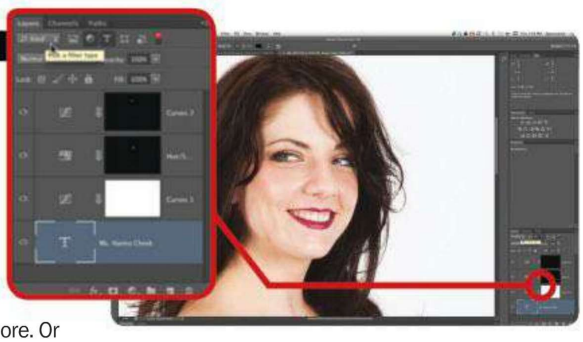
• Crop to simplify. By lowering the camera angle, Cauli erased most of the busy background. "Include only those details that help create mood and don't distract from your subject," she says.

—Peter Kolonia

Cauli shot with a Nikon D700 and 80–200mm f/2.8D Nikkor ED zoom; exposure, 1/200 sec at f/7.1, ISO 320. For more of her work, visit 500px.com/francesca saracauli.

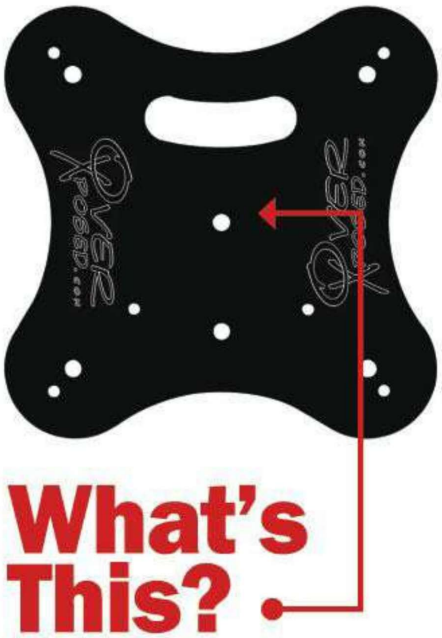
FRANCESCA SARA CAULI

30-SECOND SOFTWARE



SEARCH YOUR LAYERS Serious photo retouchers are known to create Adobe Photoshop documents with hundreds of layers. Until now, finding a particular layer involved a lot of scrolling and opening and closing of layer folders. But Photoshop CS6 adds a search bar to the top of its Layers panel. Search by layer type to display just your pixel layers, just adjustment layers, and more. Or use the pulldown menu to choose to search by name, effect, mode (to search by blend mode type), attribute (for instance, whether there's a mask or the layer is visible), or color label (did you know you could label a layer by color?). Turn the filtering on or off with a switch on the right side of the search bar. *—Debbie Grossman*

DEBBIE GROSSMAN



What's This?

Floor Plate

▶ **What it is:** A small, flat support for a camera or light, with threaded sockets for attaching ballheads or light studs.

▶ **Why use it:** Very compact and able to hold larger rigs more stably than ground-level tripods or light stands, camera plates allow for lower-angle shooting, accept three or four cameras per plate, can be bolted to wooden bleachers or poles, and may sometimes go where tripods are prohibited.

▶ **Which to buy:** Overexposed brand plates, such as the OX Pro Platform ($125, street), form a system with threaded studs for lighting accessories and posts for raising mounted cameras.

What makes MeridianPro different?

"Lab correction, on every product they offer, at **no extra charge.** Other labs I've used have moved to a non-lab-corrected workflow. I've got the latest-and-greatest software and think I do a pretty good job adjusting my images, but I still like having trained tecs at the lab give the color ajdustments I've made a second look, to tweak them if needed, for the best print possible. I think it makes a real difference."

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This is only a small sample, Meridian offers over 80 print sizes, with panoramic sizes up to 120 inches. That's correct, true photographic prints, lab corrected, as large as ten (10) feet long.

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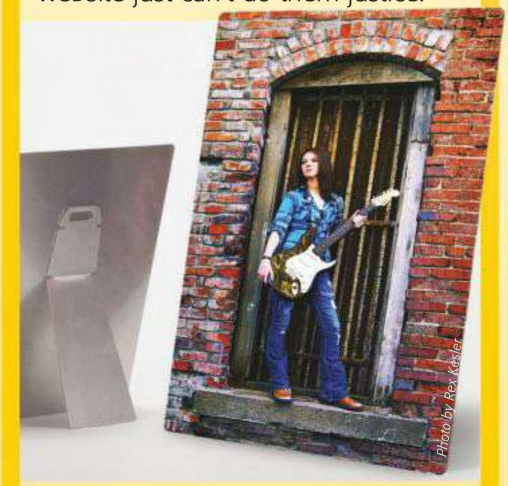
Meridian's Metal Prints have to be seen to be appreciated, examples shown in a magazine ad or on the website just can't do them justice.



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JILL REGER

CLASSIC RIDES

Cruising and shooting the vintage car circuit

DETROIT MAY have churned out a lot of clunky metal monsters over the years, but it has also created some truly gorgeous works of mechanical art. Thousands of these beauties, pristinely preserved, appear regularly at classic auto gatherings around the country. Whether it's a big national show or just "cruise night" at the local diner, strolling among these vintage rides will surely lead you to some cool pictures.

You'll find the best photos in the details, says Phoenix-based Jill Reger (jill-reger.artistwebsites.com) who has shot "probably 5,000" cars. She often overlooks the entire car (tough to shoot in bumper-to-bumper shows) in favor of an intricate hood ornament or elegant fender. She suggests wandering with an open mind and a ready camera, and shooting lots of pictures. "My process of shooting is more like the shotgun method," she says. "I often walk away with 20 or 30 frames of a single detail."

Rather than shrinking from the hot Arizona sun, Reger likes capturing the brilliant colors produced by hard, contrasty light. "Metallic paints at midday are the toughest," the photographer says, "but a blown-out area is easily fixed with a bit of cloning."

A cool trick: She frequently zones in on multicolored reflections in chrome work created by reflections of nearby cars and peoples' clothing.

She shoots in auto-bracket mode (0 EV, +1 EV, and –1 EV) and often restricts depth of field for detail shots. Just as important, she says, is where you focus: "Always focus manually and pinpoint what you want to be the sharpest."

Reger carries two Nikon D2x bodies with 35–70mm f/2.8 and 70–200mm f/2.8 Nikkor lenses, plus an 18–35mm f/2.8 on standby. Two tools she considers necessities: a Steady Stick for supporting her longer lens and knee pads for getting low angles in comfort. *—Jeff Wignall*

WHERE TO GO

OF CAMERAS AND CARS

YOU'LL FIND CRUISE NIGHTS IN MANY PLACES; BIG SHOWS DRAW A HALF-MILLION VISITORS OR MORE. SEE NATIONWIDECARSHOWS.COM FOR LISTINGS. SOME SEPTEMBER EVENTS:

- **CHARLOTTE AUTO FAIR** Charlotte, NC, Sept. 20–23 Mega show—some 1,600 cars, and 7,000 vendors. (charlotte-autofair.com)
- **FALL JEFFERSON CAR SHOW AND AUTO SWAP MEET** Jefferson, WI, Sept. 28–30 A massive collection of street rods, rat rods, and customs. (www.madisonclassics.com)
- **NORTHEAST STREET ROD NATIONALS PLUS** Burlington, VT, Sept. 21–23 More than 1,600 street rods, customs, muscle cars, and street machines. (nsra-usa.com/Events/#)
- **ROCK AND ROLL CAR AND BIKE SHOW** Scottsdale, AZ, Saturdays, 4:30–9 p.m. Weekly cruise-in show—up to 500 cars a week. (rockandrollcarshow.com)
- **SHADES OF THE PAST HOT ROD ROUNDUP** Pigeon Forge, TN, Sept. 7–8 Held at Dollywood's Splash Country—this is its 30th anniversary. (shadesofthepast.com)
- **STATER BROS. ROUTE 66 RENDEZVOUS** San Bernadino, CA, Sept. 13–16 1,700 pre-1975 cars hit the Mother Road. (route-66.org)
- **SUPER RUN 2012 CAR SHOW** Henderson, NV, Sept. 20–23 It draws more than 1,000 classic cars and 100,000 spectators. (superrun.com)

Hoodman builds RAW STEEL ruggedness and "Pin Guard$_{tm}$" into a new SuperSpeed USB 3.0 UDMA Card Reader

Enjoy time saving 5 Gbps data transfers of CompactFlash or SD cards with a new ruggedized RAW STEEL SuperSpeed USB 3.0 UDMA card reader from Hoodman. Downloads are up to 10 times faster than USB 2.0 specs.

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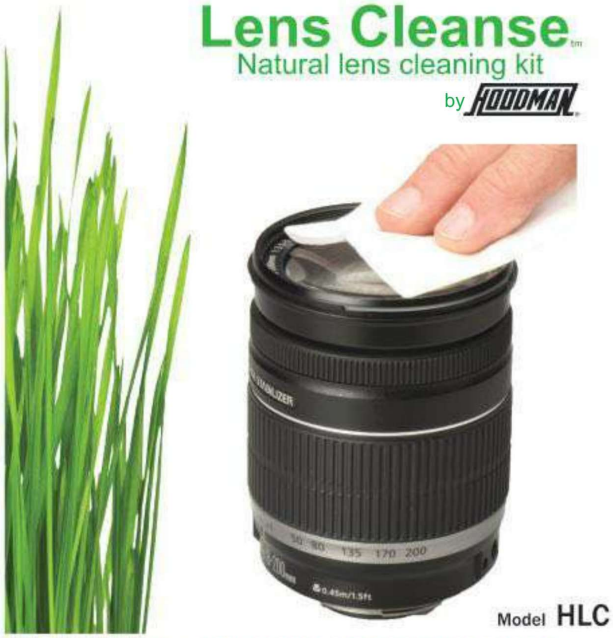

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Soap Opera

FERYAL "FAYE" BERBER

With the right light, turn soap bubbles to fine art

A SELF-DESCRIBED "accidental" civil engineer, Feryal "Faye" Berber has been translating visions from her mind's eye into photographs ever since she got her Canon A-1 in 1983. The Ringoes, NJ, resident finds motivation in her curiosity rather than a paycheck. The experiment in effervescence shown here tested her eye, as well as her lighting skills.

Her subject did not require an engineering degree to make: She used a bottle of bubble-making solution, the kind that comes with a wand and geared to kids. With a couple of LED flashlights, some reflective surfaces, and plenty of trial-and-error, she captured this gorgeous purple-hued pattern reflected in and magnified by the bubble's dome.

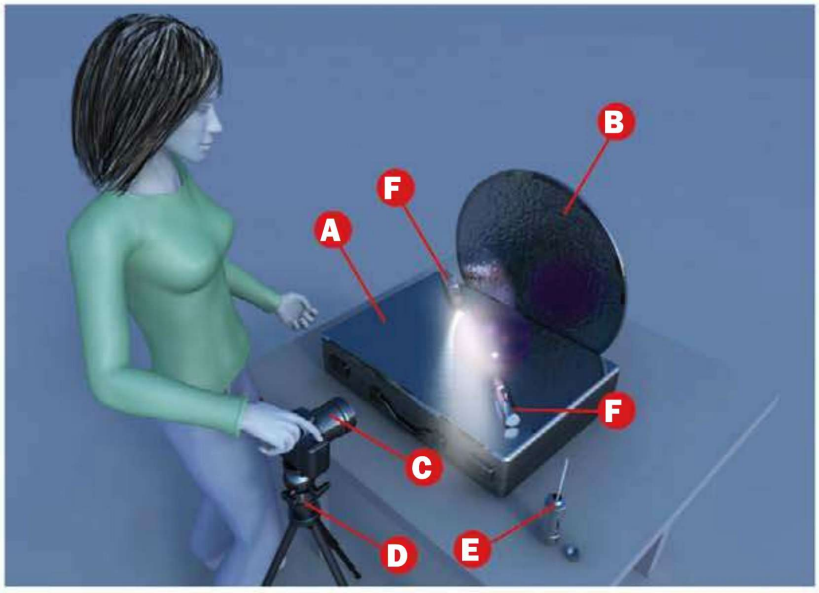
"I needed a light that gave me the flexibility to move around the bubble," Berber says. "It had to be small and light, so that I could work as quickly as possible."

"I had to work quickly," says Berber, who moonlights as a fine-art photographer. "The bubbles had a short lifespan."

Berber began her experiment with a plain white board and dishwashing liquid, blowing bubbles with a plastic straw. Unsatisfied with the results, she gradually replaced materials until she ended up using a

FUN WITH LED FLASHLIGHTS

SIMPLE ■■■■■■■■■■ COMPLEX



KRIS HOLLAND/MAFIC STUDIOS (ILLUSTRATION)

After initial experiments with a flat white surface produced subpar results, Faye Berber settled on the dimpled metal case (A) from a Prima knife set. She positioned a 22-inch reflector disc (B) opposite her camera, a Canon EOS 40D with a 17–85mm f/4–5.6 Canon EF-S IS lens (C) mounted on a Velbon CX-586 tripod (D). Using a straw to blow bubbles with some Miracle Bubbles liquid soap (E), she experimented with two LED flashlights (F), aiming them at various angles until she was satisfied with the reflection pattern. The arrangement she settled on pointed each light almost directly at each other, but out of alignment and off axis to the camera enough to capture the reflections in the bubble while keeping the background dark. "First, the light hits the surface a little bit, and bounces back to the dome of the bubble," she says. "That's what creates the little rainbows."

THE GEAR

Miracle Bubbles liquid soap, 8 oz bottle **($0.60, street)**

Eco-i-Lite Li-Ion LED Flashlight **($25, street)**

Impact collapsible 22-inch reflector **($17, street)**

PRODUCT PHOTOS COURTESY OF MANUFACTURERS

dimpled, aluminum knife case and a 22-inch reflector. Together, these reflected the only light sources, a pair of LED flashlights—one placed at about a 60-degree angle to the camera, the other at about 120 degrees—to great effect.

"I wish I had had five hands," she laughs. "The stressful part was aiming the lights, blowing the bubble, and pressing the shutter before the bubble burst."

Berber captured this image using a tripod-mounted Canon EOS 40D set to 1 sec at f/13, ISO 200.

The textured metal surface provided by the aluminum case reflected light up into the dome of the bubble, creating a field of tiny rainbow reflections. Berber posits that the back of a CD, a cheese grater, or even wrinkled aluminum foil, could substitute for the dimpled metal case.

All you need is a darkened room, a pair of flashlights, and the patience of a tinkerer. "The only limit is the imagination," she says. "This shot does not require very expensive studio equipment. You simply need a camera." And a pair of flashlights, of course.

While not every experiment bears fruitful results, Berber sees her failures as an important part of her photographic process. She says, "Sometimes I spend hours shooting and end up with nothing—except learning."

—Matthew Ismael Ruiz

SONIA WEISER

See the Steps in Action

Bring this story to life with your iOS or Android phone or tablet! Search for "PopPhoto Interactive" in the app store, download the app, and point your device at the illustration for each step on these two pages to see Software Workshop come alive.

SIMPLE COMPLEX

Resize Smarter

How to change your image size accurately, every time

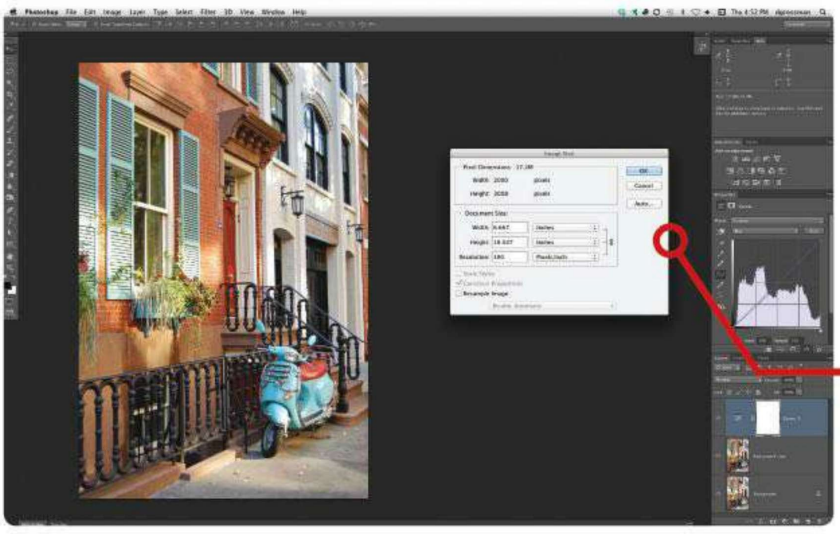
ADJUSTING YOUR image size in Adobe Photoshop or another image editor sounds simple on the surface, but the Image Size dialogue box has flummoxed more than a few photographers. Figuring out when to check the box to turn resampling on, or whether to change the image dimensions or pixel dimensions isn't quite as intuitive as we wish it were. And like many things in Photoshop, explaining it in generic terms can sometimes make it all the more confusing. Some things are just better taught by example.

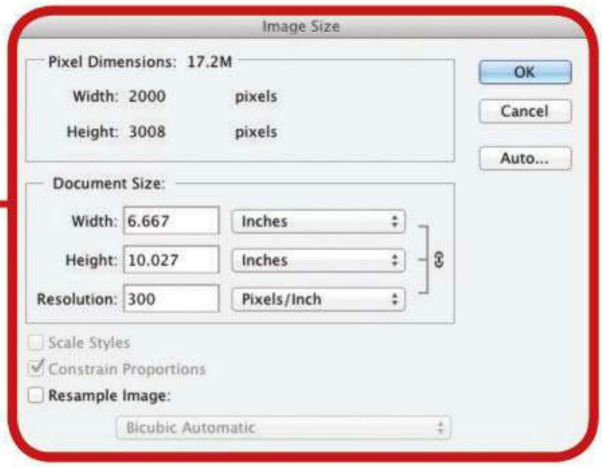
So here are four resizing scenarios, along with the proper inputs for the Image Size dialogue box. Read through them, and when you're finished, you'll have a good sense of how the dialogue box works and know when to apply which method.

—Debbie Grossman

First Step

Begin by going to Image > Image Size. The dialogue box always tells you what you're starting with. This is a 17.2MB JPEG file. The Pixel Dimensions box tells you the number of pixels in your image (multiply width by height if you want to know how many megapixels your image is). **The Document Size box tells you how big your image will print and at what resolution.** In this case, in its native resolution, this photo will print at about 6.5x10 inches at a standard print resolution of 300 pixels per inch (ppi).

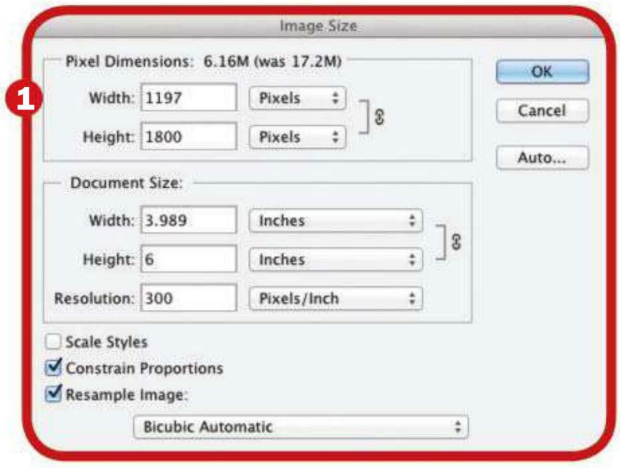




Scenario 1

RESIZING TO PRINT SMALLER

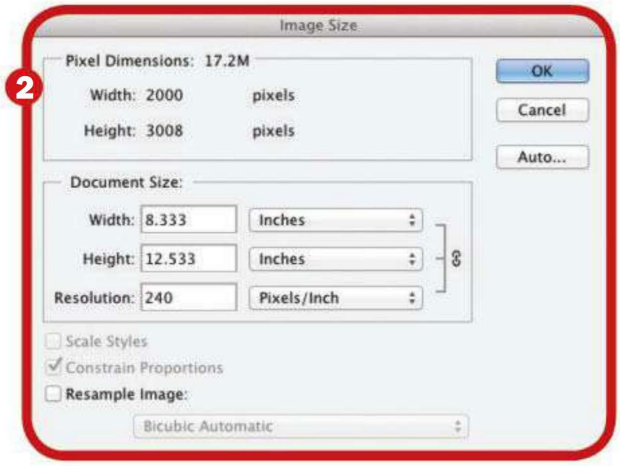
To shrink an image to print at a smaller size, you'll need to get rid of some pixels, so check the box for Resample Image. When it's checked, the Pixel Dimensions box is no longer grayed out, because changing the Document Size actually changes the number of pixels. **So check the Resample box and input your desired size into either the Width or Height box.** As long as Constrain Proportions is checked, you will only need to modify one side—the other side will shrink accordingly. For a 4x6-inch print, put 6 inches into the Height box: Note the change in pixel dimensions and image size, which shrinks to 6.16MB.



Scenario 2

RESIZING TO PRINT A BIT LARGER

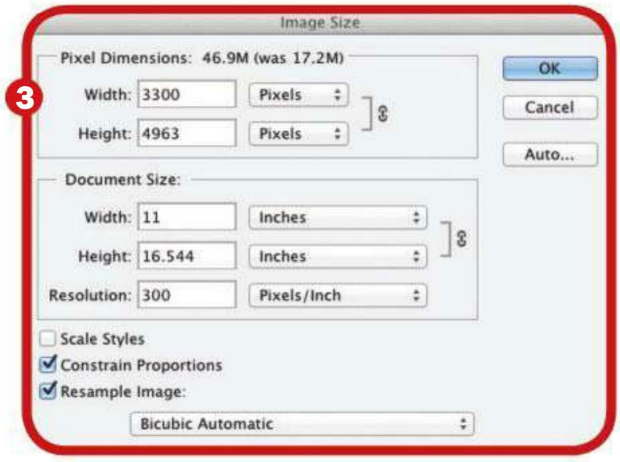
It is much easier to shrink an image than to expand it. Usually, 300ppi is an ideal resolution for photo printing, but with bigger prints, you can get away with 240ppi. Major enlargements require adjusting the pixel dimensions, but before you do this, find out how big your image would print at 240ppi. **To do so, keep Resample Image unchecked so your pixels remain the same, and input 240 into the Resolution box.** The biggest this image will print without adding resolution is about 8x12.5 inches. Not bad.



Scenario 3

RESIZING TO PRINT MUCH LARGER

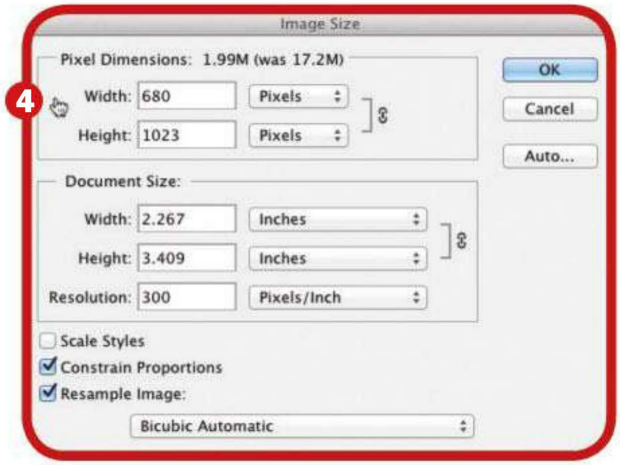
If you need to go even bigger, you must adjust both the resolution and the width or height. Be careful—upsizing your image too much, especially without a plug-in such as Perfect Resize, can get dicey. When you try to add resolution, Photoshop makes its best guess at creating pixels. The more detail your image has, the tougher it is to up-res. With this 6MP image, a nearly 11x17-inch print is about the largest we can print before the image starts to really degrade. **Check the box for Resample, and input your desired maximum width or height. Then type in your desired resolution.** With Resample checked, you can modify Width or Height and Resolution in the Document Size area independently.



Scenario 4

RESIZING FOR A SPECIFIC FILE SIZE

Sometimes you'll need to submit an image to a contest or website that asks for an image that's no larger, than, say, 2MB. Or you plan to email an image and you don't want to overburden a loved one's inbox. When that happens, it's time to maneuver the pixel dimensions. Make sure Resample Image is checked, then adjust the width or height with what Photoshop calls scrubby sliders. **Mouse over the word Width in Pixel Dimensions, and you'll see a pointed finger cursor come up. Click and drag left until you reach your required maximum size.** It doesn't matter what your Document Size information says—if your image is for display online, the number of pixels is what determines the display size.



Pram Cam

Great pictures in canned goods

"IT'S A CLASSIC rig shot," says Rich Lavigne, a former drag-racing photographer in South Plainfield, NJ. He explains, "In automotive photography, a rig shot is when the camera is attached to the side of a car using an arm and clamp mechanism. You make the shot by dragging the shutter while the vehicle is in motion."

Lavigne, with wife Anne, now specializes in weddings: anneandrich.com.

But instead of a turbo-charged hot rod, the vehicle in this photo of his is a baby stroller, and the venue is no drag strip, but one of the aisles in his local Wegman's supermarket. The passenger? Lavigne's then six-month-old son, Tyler.

Rig shots result in a sharp car and blurred backgrounds. Lavigne made this as part of a 365-day shooting project and entered it

RICH LAVIGNE

SIMPLE COMPLEX

Lavigne used a Canon EOS 5D (since replaced by the 5D Mark III (A)) and 16–35mm f/2.8L II Canon EF zoom (B). He mounted camera and lens to the stroller using a Manfrotto Super Clamp (C) with stud (not shown). His exposure: 1 sec at f/13, ISO 100.

Step 1

Practice at home. "Before heading out to the store, I fit the camera, lens, and mounting hardware to the stroller, and then made a few test shots to see what the composition would look like with Tyler in the frame," explains Lavigne.

Step 2

Scout the backgrounds. The photographer looked for an aisle with dense shelving that would fill the sides of his composition from top to bottom. It also helped that the aisle had long, horizontal aluminum strips (for product prices) that added important structure to the motion blur.

Step 3

Find the exposure. "Most people see the photo and assume that I was pushing Tyler very fast, but it's the slow shutter speed of 1 sec that gives the illusion of speed," he says. An f/13 aperture gave him enough depth of field to make both the shoes and the face relatively sharp, and by shooting directly under an overhead light, Lavigne could set ISO 100 for a noise-free image.

Step 4

Experiment until you get it. Lavigne made multiple test shots, varying the speed of the stroller until he got a look he liked. He continued shooting until he was rewarded with a photo in which Tyler was motionless for the entire 1-sec exposure.

Final Step

Tweak in an image editor. Later, in Adobe Lightroom 3, Lavigne adjusted white balance, boosted color saturation, and upped the contrast a bit.

in our monthly Your Best Shot competition. His advice for rig shots? Use an ultrawide lens to capture plenty of background—the blur there is what makes these images so compelling. If you're shooting with an APS-C body, this means a 10 or 12mm.

And experiment: Changing the shutter or subject speed can have a dramatic impact. "If the effect works out, that's great. If not, well, have at it again!" Lavigne says.

—Peter Kolonia

SHOOT BY BOAT

Over two-thirds of our planet is covered in water. Whether it's salt or fresh, an incredible diversity of species, scenery, and ecosystems are found in and near water. One piece of equipment can give you access to species and places you might otherwise never see in this watery world: a boat.

Text and photos by Jason Hahn

GRIZZLY, LAKE CLARK NAT'L PARK, AK
A female surfaces with a fish for her cubs. Canon EOS-1D Mark III, 500mm f/4L Canon EF IS lens on Vanguard monopod, 1/800 sec at f/5, ISO 800.

GRIZZLY MOTHER WITH CUBS, LAKE CLARK NATIONAL PARK, AK **Approach by boat put reduced stress on mother bear. Hahn used a Canon EOS 7D and 100–400mm f/4.5–5.6L Canon EF IS lens; 1/400 sec at f/7.1, ISO 800.**

FOR A NATURE photographer, a boat gets you close to wildlife safely and lets you respond to an animal's actions without disturbing it. Creatures that you can photograph this way range from birds to bears, moose to manatees. And you can bring back trophy images impossible to get any other way.

You don't have to own a boat to get out on the water—you'll find lots of options for chartering or renting. By using a guide or charter, you can tap into the knowledge of someone who really knows the area you want to cover. Charters also let you shoot while the captain handles the maneuvering.

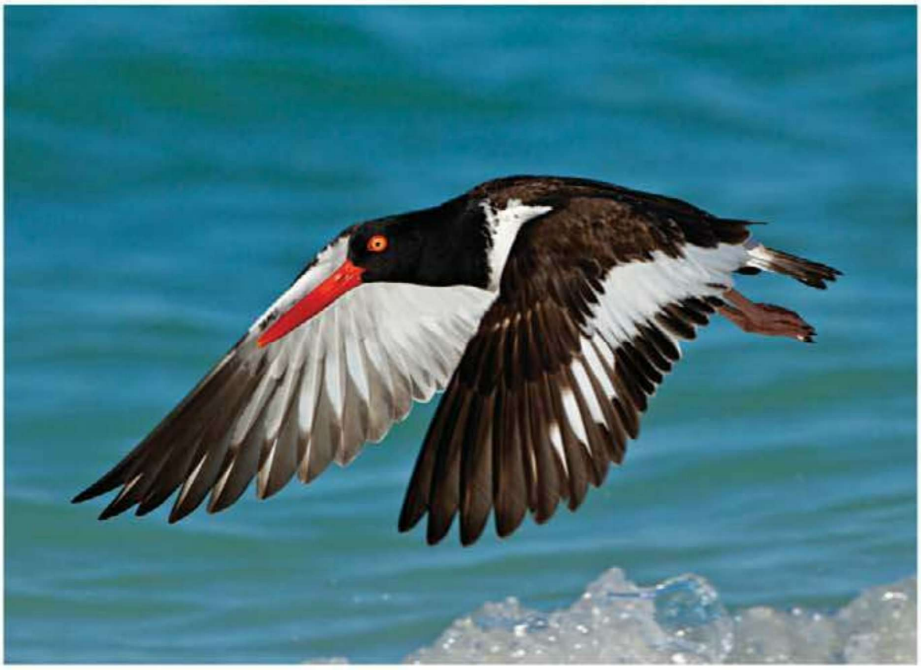
Just be sure you talk to guides or captains about what you want out of your trip. While they may know a lot about the area and its wildlife, they might not have much experience working with photographers and may assume that you can shoot critters from half a mile away with a big lens. Explain your wish list of images, how close you need to be, and the times of day when the light is best.

The internet is one of the best ways to find boat captains—just be sure they are licensed and offer the kind of trip you want. Note that some organized wildlife-watching trips are geared for large groups with the goal of just seeing an animal and motoring on. Look for small-group excursions that can be tailored to your interests.

To Motor or Not

Whether piloting it yourself or chartering, you will also need to decide what type of boat you want to use. Choose based on what you intend to photograph and the location that you will explore.

BULL MOOSE IN VELVET, LAKE CLARK NATIONAL PARK, AK
Hahn had his camera ready to shoot in his dry bag, and was able to capture this wary moose before it disappeared into the woods. Same gear as in opening spread, 1/640 sec at f/5, ISO 1250.



AMERICAN OYSTER-CATCHER, TAMPA BAY, FL
Hahn drifted in a kayak close by a newly exposed sandbar where birds were feeding. He used a Canon EOS 7D with 500mm f/4L Canon EF IS lens; 1/1600 sec at f/8, ISO 400.

Larger motorized craft can cover long distances a lot faster, carry more gear, and better handle rough water. The down side is that their size and engine noise may spook some wildlife. Smaller boats with a shallower draft, such as the Carolina Skiff line, are generally more suited to photography, giving you better access to shallow waters and room to work on deck.

The other option is to go motorless, using paddle craft such as kayaks. They have a lower environmental impact and can give you access to shallow waters where motors are prohibited or would damage the ecosystem, such as grass flats. They are also more stealthy and much less expensive to acquire and maintain. But you have to do all of the work and put the camera down to control or reposition your boat. Also, some boats can roll; a sit-on-top kayak will be more steady. The Native Watercraft Ultimate, a hybrid canoe/kayak, offers great stability and room for all your gear.

Getting Shipshape

Before you leave the dock, make sure your gear is covered—in every sense of the word. An "inland marine" insurance policy will cover loss or damage to your gear. These policies are available from most insurance companies, as well as through membership in organizations such as the North American Nature Photography Association (www.nanpa.org) and Professional Photographers of America (www.ppa.com).

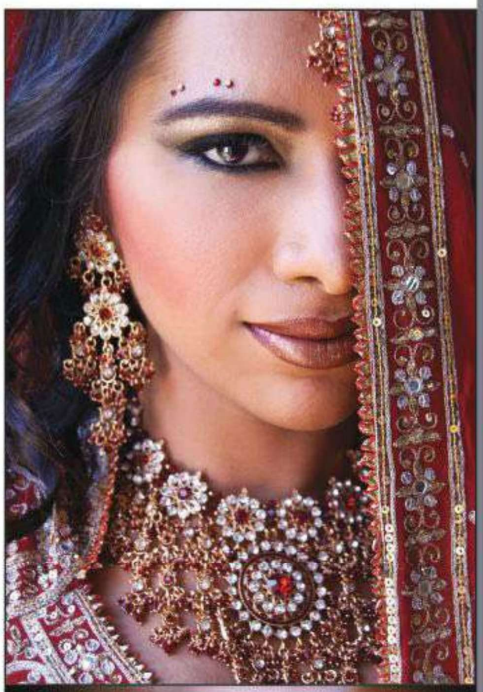
Bring your gear onboard in a dry case or bag, kept closed whenever you are moving. These work only if sealed—you don't want a splash over the bow to swamp your case and ruin your whole trip. For SLRs with large telephotos, a rolltop duffle-style dry bag keeps your gear dry and gives you easy access.

CONTINUES ON PAGE 108

POPULAR PHOTOGRAPHY

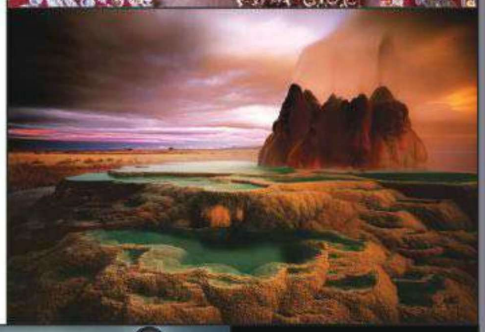
2012 / 19th Annual • Readers' PHOTO CONTEST

The 19th Annual *Popular Photography* Photo Contest gives photographers the opportunity to win prizes and have their work recognized in the January 2013 issue of *Popular Photography*, the largest photo magazine in the world, as well as on our website, **PopPhoto.com**.



Categories

- ACTION/SPORTS
- ANIMALS
- CITIES/ARCHITECTURE
- LANDSCAPE/NATURE
- OBJECTS/STILL LIFE
- PEOPLE
- PEOPLE'S CHOICE - *PopPhoto* readers will vote for their favorite image! All entrants will automatically be entered in this category.



Submissions

The competition is open to work produced from June 2011—October 2012. All submitted artwork should be of reproduction quality.

ENTRY FEE: $10
DEADLINE: October 22, 2012

Credits (clockwise): Tamiz U. Rezvi, Rodney Lough Jr., Erich Chen, Ricardo Mejia, Kathy Hicks, Ricardo Pradilla

For a complete set of contest rules, prizes or to enter, please visit: **www.PopPhoto.com/readerscontest2012**

SPONSORED BY SanDisk

The Readers' Contest, sponsored by *Popular Photography* magazine, a publication of Bonnier Corporation, is open only to individuals who are sixteen (16) years or older at time of entry, excluding residents of Cuba, Iran, North Korea, the province of Quebec, Sudan, Syria, and any other jurisdiction where this contest is prohibited by law. To enter and for complete Official Rules, visit http://www.popphoto.com/readerscontest2012 between May 14, 2012 and October 22, 2012.

The Year's Biggest Bargains

Autumn begins the traditional new-equipment season—the big Photokina expo in Germany takes place in September—which also means bargain hunters will be on the prowl for closeouts, price drops, and rebates in photo gear. Our editors, being inveterate bargain boffins, once again bring you a select list of good stuff for less.

Text by Dan Richards
Photos by Sam Kaplan

POPULAR PHOTOGRAPHY

TOP DEALS 2012

(A) TAMRON 24–70MM F/2.8 DI VC We'll admit that a sticker price of **$1,300** might not sound like such a deal, but consider: The Canon and Nikon counterparts cost nearly twice that—and neither has image stabilization, which this lens does. While not perfect (read all about it on page 88), it delivers excellent sharpness.

(B) PRO OPTIC 14MM F/2.8 Another super deal from lensmaker Samyang (sold under the Pro Optic brand at Adorama), this full-frame, manual-focus ultrawide provides excellent sharpness (see test, page 83) for **$339–$350**. While it produces lots of distortion, with one look at the prices of big-name 14mm optics, we forgive it.

(C) VANGUARD SBH-100 BALLHEAD
The buzzword du jour in 'pod heads is magnesium—lightweight and strong, but usually heavy in price. Not so for this **$79** goodie, which has a quick-release plate, bubble levels, separate lock knobs for pan and tilt, and a calibrated panning scale. And it's rated for up to 22 pounds.

(D) CANON 40MM F/2.8 EF STM It's hard to believe that Canon has never made a pancake lens, but this **$200** optic is indeed the first. Slightly wide on full-frame bodies, and longish normal (64mm equivalent) on APS-C bodies, it uses a stepping motor for truly silent and vibration-free autofocusing—a good thing for video or for stealthy still shooting.

(E) NIKON 85MM F/1.8G AF-S We love this lens because it's sharp, and fast, and quiet focusing. But we especially love it because at **$497**, it's less than one-third the price of Nikon's f/1.4 version. Is 0.67 stop really worth $1,200 to you? We didn't think so.

(F) PENTAX 50MM F/1.8 DA While **$250** might sound a little high for a 50mm f/1.8, this lens has Pentax's SP (Super Protect) anti-smudge coating on lens elements, rounded diaphragm blades, excellent fit and finish. Film fans note: It covers full-frame 35mm.

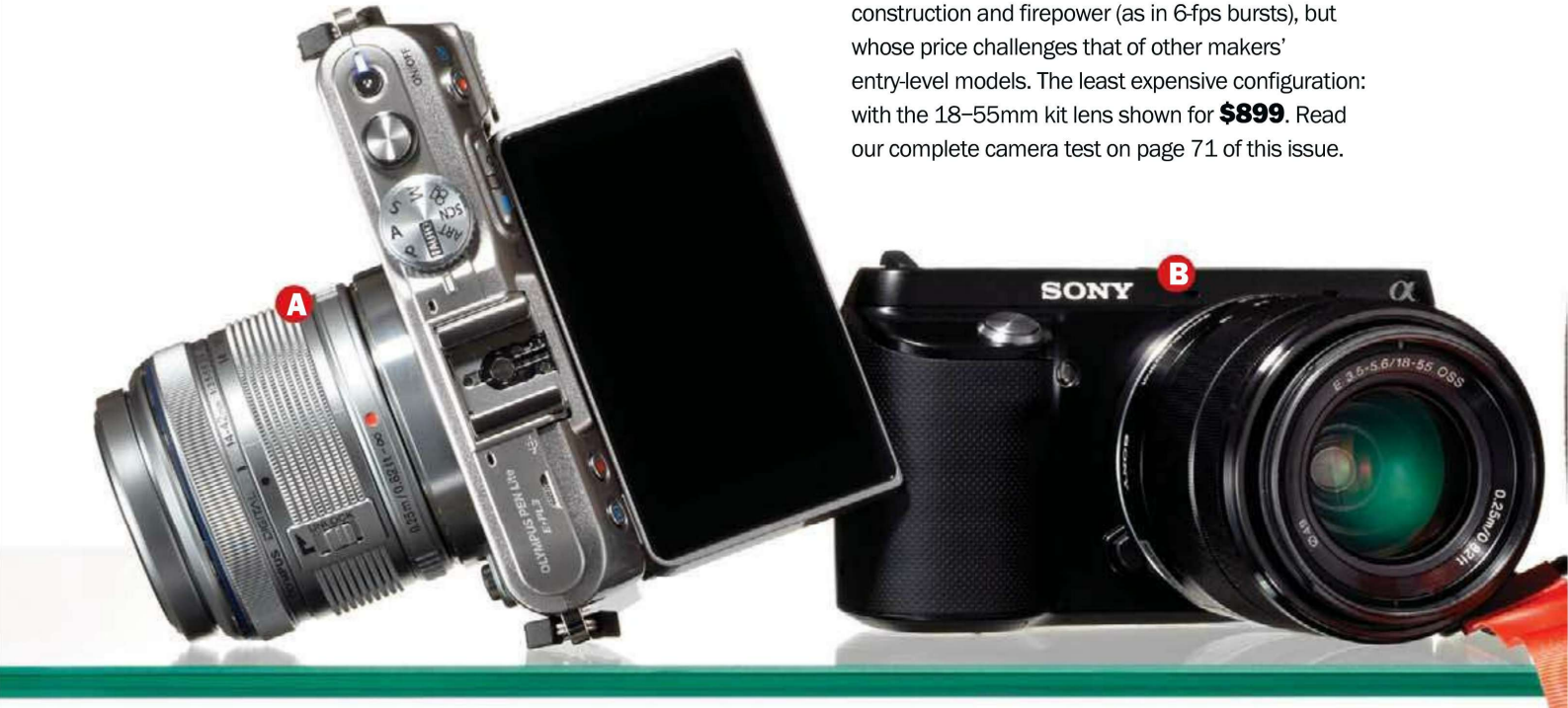
(G) SIGMA 18–200MM F/3.5–6.3 II DC OS A half-inch shorter and several ounces lighter than the previous version, Sigma's **$499** all-in-one zoom proved optically superior to other lenses of this type, achieving Excellent SQF scores at all four tested focal lengths—very rare in this class.

(H) ROKINON 7.5MM F/3.5 FISHEYE MFT A neat bit of specialty glass for Micro Four Thirds fans, this manual-focus lens provides a 180-degree full-field fisheye view on Olympus and Panasonic ILCs. Great for dizzifying stills and ca-razy video, this well-made optic streets for only **$299**.

(A) OLYMPUS PEN E-PL3 One of the most stylish ILCs at any price, the 12.3 MP E-PL3, **$599** with the 14–42mm kit lens shown, is also a good deal for those looking for compact camera with big performance. It scored Very High on image quality in our lab tests, and the tilting screen makes high-angle or low-angle shots a breeze. Lack of a viewfinder bug you? You can slip an electronic viewfinder (VF-2, $249) into the hot-shoe for 100-percent-accurate eye-level viewing.

(B) SONY ALPHA NEX-F3 If Sony's APS-C-sensor ILCs appeal to you, but the NEX-7's sticker is a little too steep, the F3 is an attractive choice. For **$598** with the image-stabilized 18–55mm kit lens (shown), you get a 16.1MP sensor, 1080p video at up to 30 fps, and a fave feature of ours, a tilting LCD monitor for wacky-angle shots and easy self-portraits.

(C) PENTAX K-30 Pentax keeps doing it—that is, producing weatherproof DSLRs with beefy construction and firepower (as in 6-fps bursts), but whose price challenges that of other makers' entry-level models. The least expensive configuration: with the 18–55mm kit lens shown for **$899**. Read our complete camera test on page 71 of this issue.



(D) PANSONIC LUMIX DMC-GF3 You want a genuinely compact and light (say, less than 12 ounces—with lens) ILC, with a rock-bottom price, but with genuine performance? Here it is: The GF3, **$379** with 14mm f/2.5 kit lens shown, achieved Extremely High image quality in our tests.

POPULAR PHOTOGRAPHY
TOP DEALS
2012

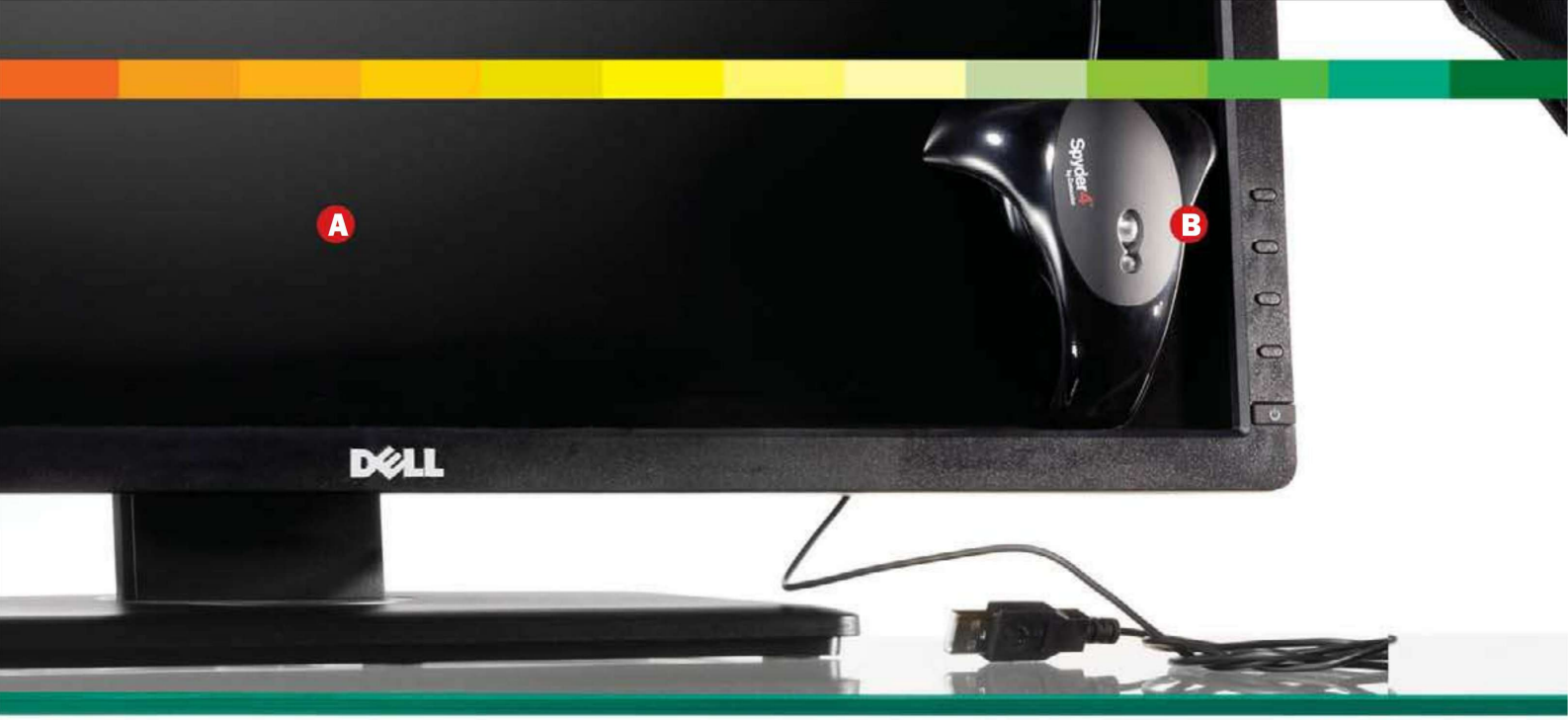
(E) CANON EOS REBEL T3i Once again, the former "Top Reb" assumes second slot with the introduction of the latest greatest (the 4Ti). Advantage to you: Pick up an Excellent-imaging, fast-focusing DSLR with 18–55mm kit lens for only **$799**—and watch for rebates.

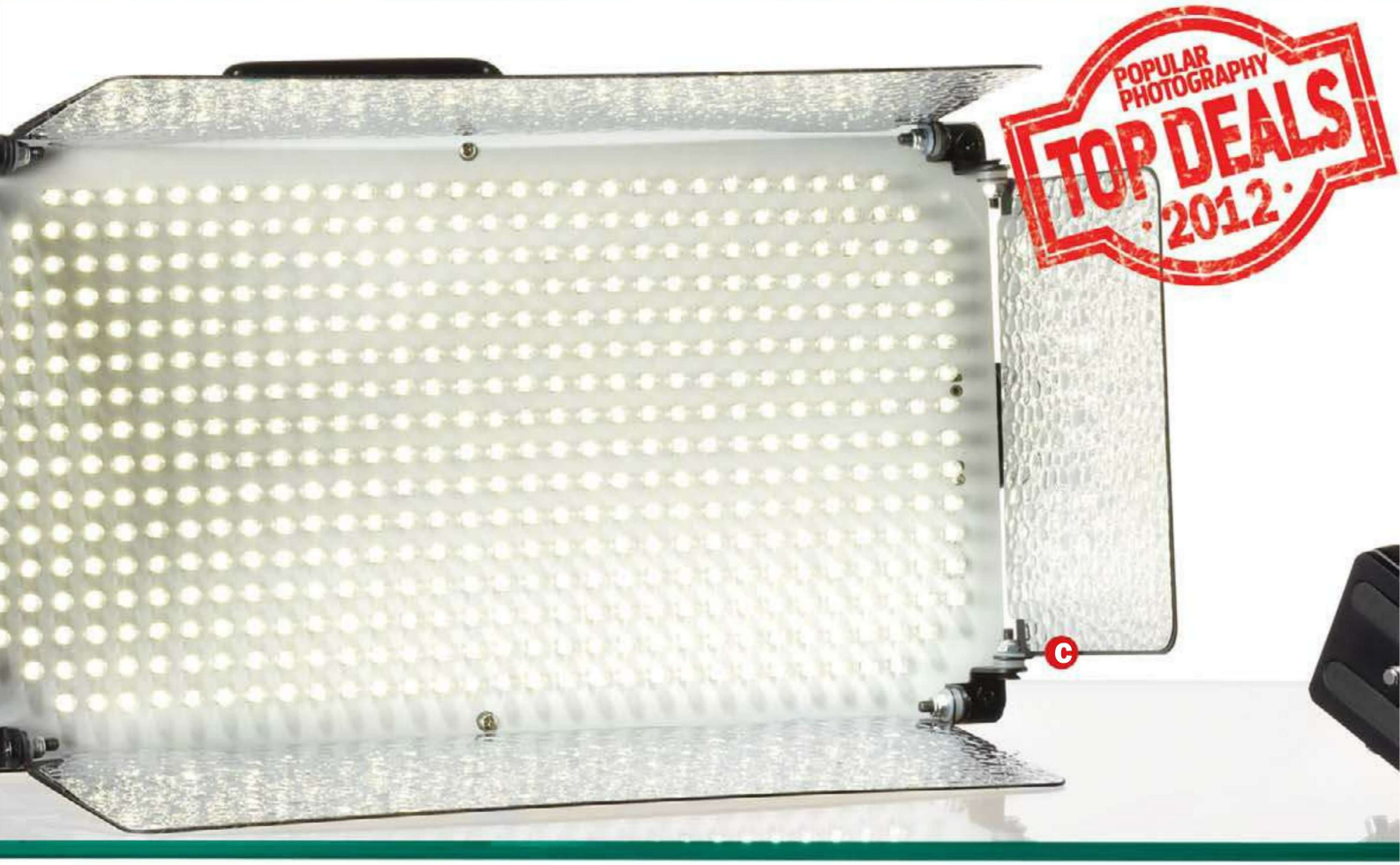
(F) FUJIFILM FINEPIX XP170 Like other cameras in the rugged class, the XP170 is waterproof (to 33 feet), drop-proof, and freeze-proof. Unlike many other cameras in this class, the XP170 comes in at well under $400—**$279**, to be precise. Built-in Wi-Fi can share automatically with social networks.

(G) SATECHI SCH-22 SUCTION-CUP MOUNT This **$20** rig attaches to any smooth surface (including a car, but we haven't tried it at speed) with a turn of the bottom knurling, rotates 360 degrees, and flips 180 degrees at each of two joints. Holds anything with a standard tripod socket, up to a DSLR with lens.

(H) THINK TANK SD PIXEL POCKET ROCKET Peace of mind (at least in regard to memory cards) can be yours for **$16** with this nine-card SD wallet. Flip your cards over in the clear pockets as they fill up, and use the sturdy strap to lash it to a bag or to yourself.

(I) NIKON D3200 If the people at Nikon have gone nuts, their insanity is your gain with the D3200, whose 24.2MP (!) sensor delivered Excellent image quality in our test. It's **$699** with the kit lens shown; add **$59** for the **(J) WU-1A WIRELESS MOBILE ADAPTER** for Wi-Fi uploads.





(A) DELL ULTRASHARP U2412M 24-INCH LED DISPLAY The hot three letters in monitors today are IPS, for in-plane switching, the technology that provides a much wider viewing angle, which makes colors more consistent off-angle. This Dell is one of the least expensive we've seen (**$296**), and an editor who was using one pouted demonstratively when we took it away for a photo shoot.

(B) DATACOLOR SPYDER4EXPRESS We've always been big on regular monitor calibration, and this software/hardware kit at **$120** not only saves you money, but even more importantly, time and trouble. This latest version can also calibrate iPhones and iPads, so your photos can have consistent color across platforms. Consider it an absolute must if you make prints on a regular basis.

(D) WESTCOTT APOLLO ORB WITH GRID The 43-inch Orb octabox (**$130**) is deep and lightweight enough to Velcro to a lightstand, where it can accept many monolights or any shoe-mount flash. It produces circular eye catchlights, and the output can be softened with the included diffusion panel. For **$70** more, you can add the extra light-focusing ability of an egg-crate-style grid.

(E) DOT LINE MAGIC RIG V1 Getting more serious about DSLR HD video? You'll need a dedicated camera support, and this **$99** shoulder-stock type won't break the bank of your budding studio. It has a zillion—well, seven—adjustments tightened with lever locks, can be set for right- or left-handed use, and has a quick-release platform for the camera. The almost all-metal construction and good finish are pretty impressive for this price.

Get App-y

ADOBE PHOTOSHOP LIGHTROOM 4 This latest version (**$149**) may be all the editing software any photographer—novice to pro—needs. New targeted adjustment tools make Photoshop less necessary.

CAMERA AWESOME The master of all iPad/iPhone camera apps is **free**. Capture, geotag, edit, and share your photos and videos.

CAMERA360 Add this **free** powerhouse to your Android phone for editing options, plus live preview of filters and effects.

HALFTONE For **$0.99**, give your photos speech bubbles, filters, captions and other classic comic book effects. Only for iOS.

LAPSE IT Shoot a time-lapse or stop-motion video (you decide on the time interval) and post it to Facebook. Available **free** for both Android and iOS devices.

PHOTO GRID Display your images in premade layouts, or go freestyle and create a scrapbook look with this **free** Android app.

PHOTO MANAGER PRO Organize the pictures on your iOS device by date, search by name, and (alone worth the **$2.99** price) password-protect folders you want to keep, ahem, private. *—Sonia Weiser*

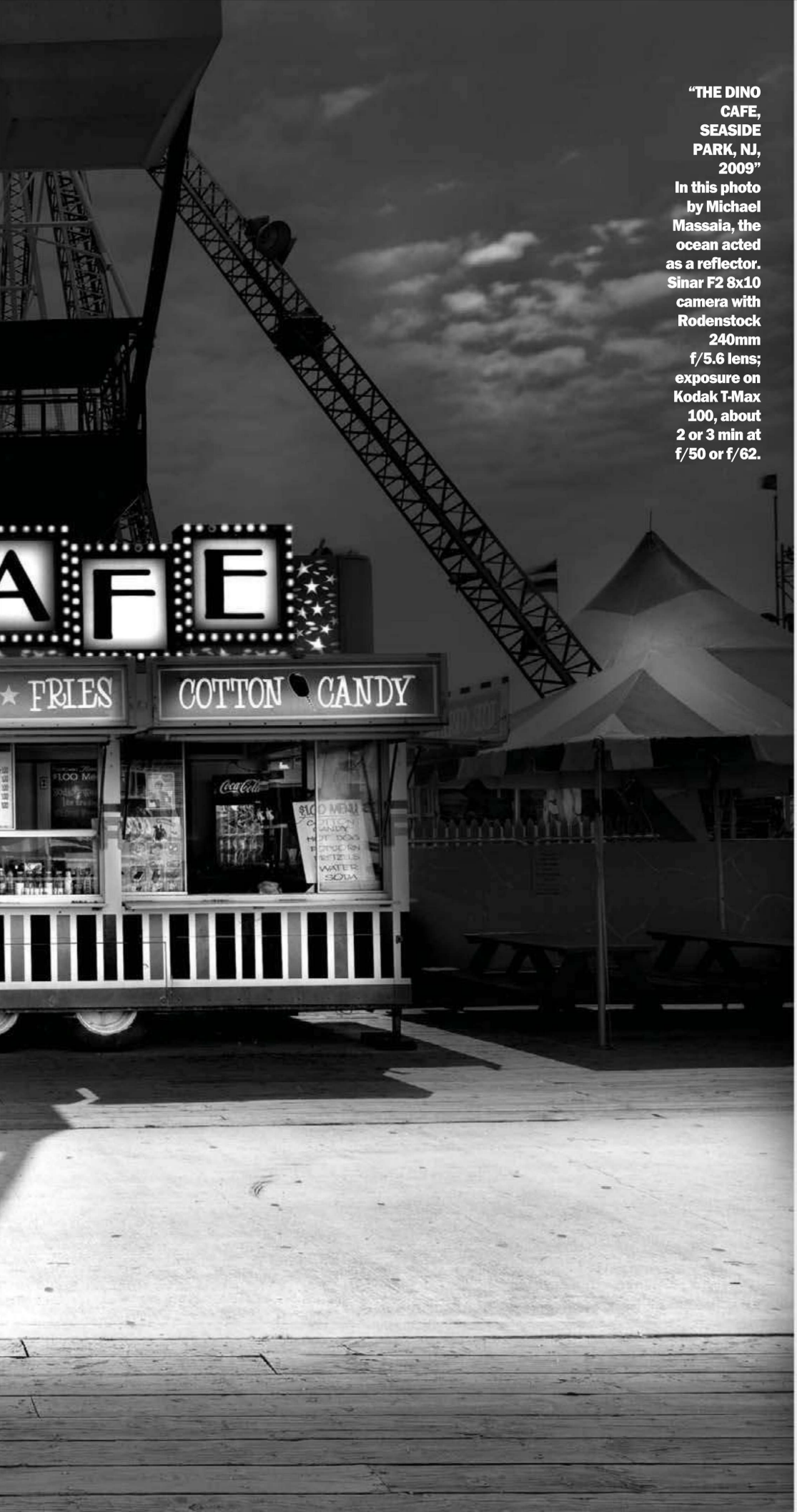
(C) FLASHPOINT 500 LED LIGHT Sold by the Adorama store in New York, this unit, at **$199**, is less than half the price of comparable models. It offers full and half power settings, as well as continuous dimmability. And unlike many LED panels, its output can be focused, thanks to built-in barn doors. It runs off AC mains or DC battery power, is cool in operation, and its low power draw won't pop a fuse.

(F) SEAGATE BACKUP PLUS 1TB Sized to fit a shirt pocket, this portable hard drive lets you easily back up on the road. And we think you'll agree that **$110** is very little to pay for this kind of security—how much are your photos worth to you? This new model can connect via USB 3.0 and can be set for quick resizing and downloads to sites such as Flickr and Facebook. The slightly larger desktop model costs $10 less.

FILM LIVES

By Debbie Grossman

MICHAEL MASSAIA



"THE DINO CAFE, SEASIDE PARK, NJ, 2009"
In this photo by Michael Massaia, the ocean acted as a reflector. Sinar F2 8x10 camera with Rodenstock 240mm f/5.6 lens; exposure on Kodak T-Max 100, about 2 or 3 min at f/50 or f/62.

The medium that was left for dead takes on new life in the hands of contemporary photographers. They might just inspire you to dust off your old film camera.

SOME PEOPLE might say that Michael Massaia is a little bit crazy. Six months out of the year, you'll find him lurking around empty piers and truck stops in the wee hours of the morning, toting a camera that wouldn't look out of place in the late nineteenth century. The rest of the year he is holed up in his basement darkroom, creating platinum prints the likes of which the world has never seen.

And though he's an extreme example, Massaia is not the only photographer who feels it is only through film that he can create the pictures of his dreams. In fact, he's part of a cohort of photographers who love film for many of the very qualities that caused so many of us to abandon it for digital: its slowness, its mystery, and even its persnicketiness.

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DINA KANTOR, WWW.DINAKANTOR.COM

"TRENTON AND MADISON, TREECE, KS, 2010" **Just before the rain came, Dina Kantor photographed these children in their grandmother's backyard. Mamiya RZ67 with 65mm lens on Kodak Portra 160NC; exposure not recorded.**

Recording on Film

As soon as the resolution of digital became close to that of film, most of us gladly gave up film for the instant satisfaction of digital. But it is, in part, that very slowed-down quality that the shooters featured here love.

Sure, Christaan Felber (shown on page 68) does use digital when he's shooting a dimly lit rock show, as does Erica McDonald (opposite page) when she's on a job that requires it. Commercial photographers both, Felber and McDonald see film shooting as something that differentiates them from the crowd and gets them hired.

Have a conversation with a film devotee about shooting, and (if you learned photography through film) it's difficult not to get nostalgic. Words and concepts you haven't thought about in years come rushing back: the zone system, rating and pushing, changing bags and film stocks...

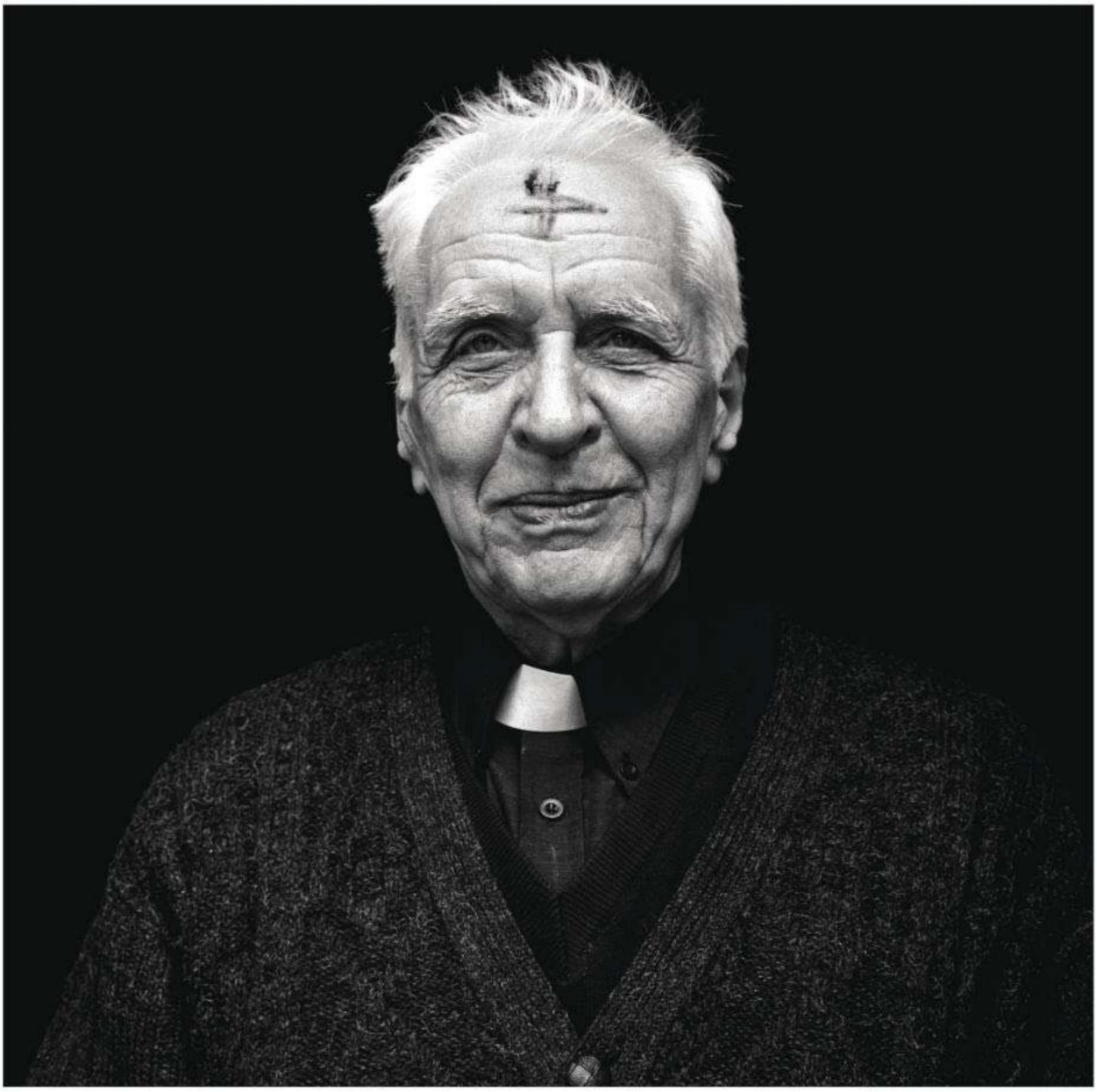
But what comes up the most is the difference in the shooting process. Portrait photographers say the medium allows a deeper and more intimate relationship with the subject.

Dina Kantor, who is in the midst of a documentary project on the town of Treece, KS (an example is above), notes that film is particularly useful when she's photographing children, as they are very curious about the camera. They love looking through the viewfinder of her Mamiya RZ to see the world represented backward. The time required for preparation and setup, and the conversations that happen then, are crucial for Kantor in developing a rapport.

McDonald counts on her twin lens reflex Rolleiflex 2.8 FX for portraits because she can keep an eye on the scene as she works. Unlike with SLRs, when shooting with TLRs there's never a moment in which the viewfinder blacks out her view of the scene.

"You can always see the exact moment you are photographing—the camera isn't between your eyes and the eyes of your subject," she says. This is crucial because, "if you're trying to create a connection with a person, you don't have to take your eyes off them at any time."

Film isn't only beloved for por-



A VISITING PRIEST, ASH WEDNESDAY **For her project *40 Days*, Erica McDonald stood outside a Brooklyn church and made quick portraits as her subjects left mass each day during the Lenten period. She shot with a Rollei Rolleiflex 2.8 FX on Kodak Tri-X 400 film pushed to 1600; exposure, about 1/60 sec at f/5.6.**

ERICA MCDONALD, WWW.ERICAMCDONALDPHOTO.COM

traits. Massaia, who shoots exclusively with 4x5 and 8x10 cameras, uses film not for the process but for the results (pages 64 and 102). Knowing he wanted to capture serious detail, he started shooting with medium format, thinking that would be big enough.

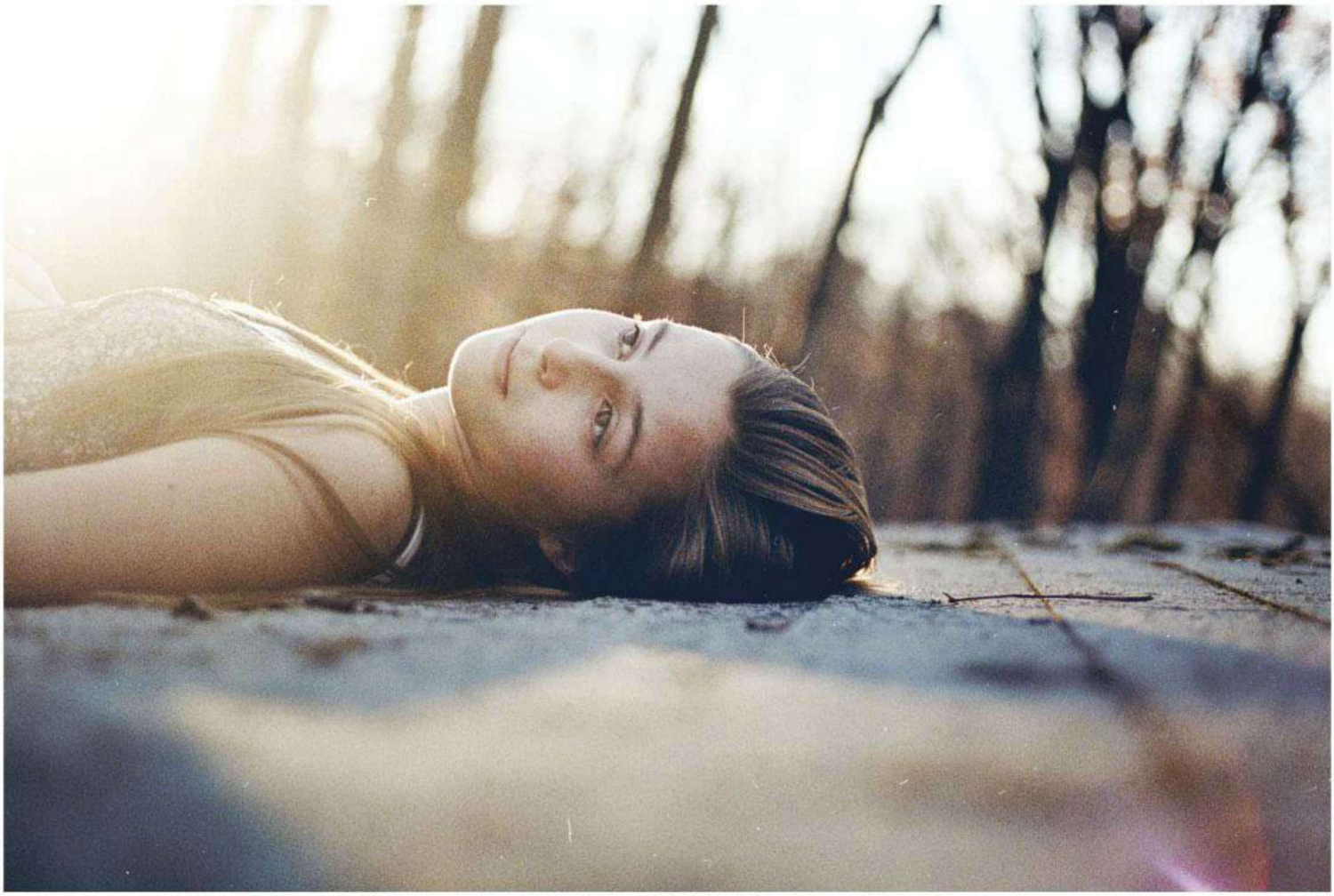
But it wasn't long before the self-described obsessive photographer went straight to 8x10. It is only with large format, he says, that he can capture the "three-dimensional quality" of the pictures he plans in his head.

He also loves his view cameras for their ability to correct and control perspective. Massaia adores symmetry and perfection, and, he points out, we are so used to seeing photographs that are distorted that an image with correct perspective looks alien to us.

Richard Rothman, like Massaia, counts on the incredible detail and the perspective control of a large-format camera. For the photo on page 69, from his book *Redwood Saw* (Nazraeli Press, 2011), Rothman carried a good 15 pounds of photo gear (not counting lunch) though the woods.

He uses his Arca Swiss 4x5 camera in a process that he has come to think of as "the wilderness version of street photography" because he has such a short time to capture the light in such dense foliage. (For digital shooters: "Fast" translates to about 5 minutes in the large-format world, though this exposure was about 1/8 sec at f/22.)

Digital shooters frequently rely on their LCD screens to check composition and lighting, consult the histogram to find out if they have an accurate exposure, and review to see if they've captured the moment sufficiently to move on. But these film shooters love the absence of that screen. Felber feels that the lack of feedback forces him to push his work farther—because he's never sure whether he's gotten the shot, he keeps working the scene.



CHRISTAAN FELBER, WWW.CHRISTAANFELBER.COM

After the Shoot

What photographer who grew up with film can forget the frisson when peering for the first time through a loupe or opening up an envelope of prints? McDonald especially treasures the gap between shooting and viewing that using film creates. She was taught to read the negative to see what image was good before she even created a contact print.

A teacher herself, McDonald points out to her students that they only have one chance to see their pictures for the first time, and that they should treasure it and pay close attention. She says, "There's a lot you can learn in that first viewing. You can feel in your gut if something is successful; if it's a great picture, I'll notice my breath will stop for a second."

When we shoot digital, of course, the first time we see what we've shot comes a moment later. It's interesting to consider what might be lost when the picture we just took, rather than the subject itself, informs the next one.

THE PHOTOGRAPHER'S SISTER Christaan Felber shot this scene with both film and digital cameras; he often brings multiple cameras along on a shoot. For this version, he used a Canon AE-1 Program with 50mm f/1.8 Canon FD lens; exposure on Kodak Portra 400, 1/250 sec at f/2.8.

To get from latent image to negative, these photographers take varying routes. None of the black-and-white shooters we talked to trust their negatives to a lab. McDonald has a close friend and dedicated darkroom geek who processes her film; both Rothman and Massaia do it themselves in their darkrooms. Former film junkies will remember how crucial the development process is to the character of b&w images, and once you get to know the relationship between a particular film stock and a developer, this knowledge becomes deeply connected to the shooting process.

Rothman relies on an old standard developer, Kodak Microdol-X, with Ilford's HP5 Plus film. Since he knows this relationship so well, and shoots using the zone system, he can capture the tonal range that he envisions for every shot. Unfortunately for Rothman, he found out too late that Kodak had discontinued Microdol-X, and he had to scour the internet to buy remaining stock from as far away as Europe. He did find an old publication from Kodak disclosing Microdol's formula, and he plans to try to make it himself when his supply runs out.

Even more archaic is Massaia's developer. He relies on Pyro, a staining developer which he describes as mostly abandoned nearly a century ago because of its extreme toxicity. When asked how he handles it, Massaia quipped: "With no gloves and no mask." Pyro lets Massaia drastically overexpose his Kodak T-Max 100 film and, using a formula he spent years perfecting, develop negatives with grainless high-

RICHARD ROTHMAN 2010, WWW.RICHARDROTHMAN.COM

lights and lots of shadow detail. The process is slow, though. The development of each sheet of film takes about an hour.

Color photographers have it easier—if they can find a good lab. Felber and Kantor both point to the longstanding and supportive relationships they have with their labs. They both work in New York City; photographers shooting medium format in smaller towns and cities might need to mail their film out for development (see sidebar, page 102).

Making Prints

Photography has always been a highly technical field, but, as Felber laments, photography these days forces you to "become a computer nerd, whether you like it or not." So much so does Felber feel the need for a mental cleanse after editing his photos on the computer that he retreats to working on his vintage 1965 Honda CB-77 Superhawk motorcycle. But for him, as well as many film shooters, computers are crucial to their photography.

Instead of going into an enlarger in a darkroom, their prints start with a scan, whether done on an über-expensive Imacon or a high-end flatbed. Inevitably there is dust; Kantor can spend hours zoomed in on an image in Adobe Photoshop, obsessively removing specks from every inch of her scan. Color-correcting comes next, and, depending on the photographer, a degree of retouching.

REDWOOD SAW
Rapidly changing light meant that Richard Rothman had to think fast as he set up his Arca Swiss 4x5 with 90mm f/5.6 Schneider Super Angulon lens. Shot on Ilford HP5 Plus 400 rated at 200; about 1/8 sec at f/22.

For Rothman, the *Redwood Saw* project represented his first time choosing digital output over darkroom. He wanted to challenge himself and see if he could make a digital print good enough to satisfy him, and he wanted to print larger than 20x24 inches (traditionally the maximum darkroom size). The most interesting surprise? He prints with an Epson Stylus Pro 9900 printer, and he found that Epson's Advanced Black and White software, coupled with Hahnemüle's Photo Rag Smooth paper, was the best way to get a beautifully toned black-and-white print.

Massaia, however, is so devoted to the darkroom that he spends six months of the year print-

CONTINUES ON PAGE 102

INTERFIT

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AUTHORITATIVE TESTS, REVIEWS, AND BUYING ADVICE

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DSLR TEST

RAIN READY

A starter DSLR with some advanced features

THE NEW 16MP K-30 might be Pentax's least-expensive DSLR, but it's far from "entry level." First off, it's fully weathersealed: Pair it with one of Pentax's weathersealed lenses, such as the 18–135mm f/3.5–5.6 WR kit lens or one of the premium optics in the DA* line, and you can shoot in a storm. Add to that a pair of command wheels, a 100-percent-accurate pentaprism finder, and 6-frames-per-second bursts, and you've got a camera that lives up to its more-than-entry-level pricing ($850, body only). How does it perform? Let's see.

In the Lab

With just enough resolution to eke out an Excellent rating,

PENTAX K-30

16.3MP APS-C CMOS sensor
6-fps burst shooting
1920x1080p30 video capture
ISO 100–25,600
$900, street with 18–55mm f/3.5–5.6 lens

SATOSHI

plus amazingly accurate colors and noise rated Low or better to ISO 400, the Pentax K-30 earned an Excellent rating in overall image quality at ISO 100. As sensitivity rises, resolution falls just below our cutoff, earning a rating of Extremely High at ISO 200 and 400.

We always test RAW files converted to TIFFs using (at default settings) the software that comes with the camera. But we shoot our test targets in RAW + JPEG, since looking at the way a camera handles JPEG capture often proves instructive. The K-30, for JPEGs straight from the camera, scored an image quality rating of Extremely High from ISO 100 through ISO 800.

Why? Pentax treats RAW and JPEG shooters differently. Noise reduction is set low as a default in its RAW conversion software (a customized version of Silkypix), letting you decide how much resolution-robbing NR to apply. Thus, the noise scores in our test don't look very good: The K-30 reaches Unacceptable by ISO 1600. But JPEGs captured simultaneously with the RAW files reach Unacceptable only at ISO 6400—quite a leap.

JPEGs also showed much less resolution, though enough for photographers who don't plan to print big. At ISO 100, 16-bit TIFFs converted from RAW files yielded 2510 lines per picture height; JPEGs turned in 2330 lines. At ISOs 800 and 12,800, the RAWs resolved 2370 and 2050 lines, respectively, while JPEGs yielded 2290 and 2030 lines at the same ISOs.

Color reproduction? Stellar. In our test it scored a remarkable Delta E of 5.0 (most DSLRs, at any

PENTAX K-30
WHAT'S HOT
Weather- and dust-sealed; 6-fps bursts.
WHAT'S NOT
No mic input for video recording.
WHO IT'S FOR
Shooters looking for a cost-effective, yet rugged, DSLR in the Pentax system.

STAN HORACZEK (LCD IMAGE)

1&1 MY WEBSITE

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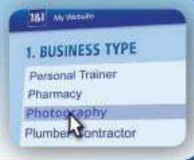

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price, land at around 7.0), easily earning it an Excellent rating.

In our autofocus test, the K-30 proved fast in bright light, but slowed sharply when the light dimmed. At the brightest level (EV 12), it took 0.33 sec to focus and capture an image. At the living-room light level of EV 6, it slowed to a still-impressive 0.54 sec. But by the time it got down to EV 1, the equivalent of a nighttime scene, it took 0.99 sec to focus. And AF slowed to 1.58 sec at EV 0 and an average of 1.79 sec at EV –1, the dimmest light in which Pentax rates AF as effective. Here it became erratic, varying from about 1.5 to more than 2 sec.

In the Field

With a deep grip, dual command wheels, and plenty to customize, the K-30 offers more control over settings and interface than any true entry-level camera on the market. You choose what the command wheels control in various exposure modes—which one sets aperture or shutter speed in manual mode, for example, or which one sets exposure compensation in aperture- or shutter-priority mode. Once you have the controls set the way you like them, you can save your settings to one of two custom groupings accessed using the mode dial. This way, various

The green button, behind the shutter button, can be assigned to a setting of your choice through the K-30's custom functions menu.

The Pentax K-30's sensor-shift image stabilization works with any lens that you mount on the camera.

TEST RESULTS

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family members can quickly bring the camera back to their favorite settings in a snap. Or, you could program settings for different shooting scenarios.

We found the controls easy and fast to use, but we did run into a couple of quirks. Our camera went into sleep mode if no buttons were pressed within 1 minute (a firmware update may fix this soon); overriding the default to set the camera to wait 10 minutes before sleeping solved this. And, to select AF points you use five navigation buttons that double as control buttons for settings such as ISO and white balance—you must hold the OK button

CONTINUES ON PAGE 93

For info on how we test DSLRs, go to PopPhoto.com/reviews.

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SPECIFICATIONS

IMAGING: 16.3MP effective, APS-C-format CMOS sensor captures images at 4928x3264 pixels with 12 bits/color in RAW mode.

STORAGE: SD, SDHC, and SDXC. Stores JPEG, DNG RAW, or RAW + JPEG files.

VIDEO: Records up to 1920x1080p pixels at 30 or 24 fps in MPEG-4 H.264 format; built-in monaural microphone; no microphone input; continuous AF available; approx. 25-min maximum clip size at highest quality.

BURST RATE: Full-sized JPEGs (Best Quality), up to 30 shots at 6 fps; RAW, up to 8 shots at 6 fps.

AF SYSTEM: TTL phase-detection with 11 illuminated focus points (9 cross-type points in center); single-shot, continuous, auto (automatically chooses single or continuous); tested sensitivity down to EV –1 (at ISO 100, f/1.4).

LIVE VIEW: Full-time contrast detection, or single-shot phase-detection AF with mirror interrupting view momentarily.

SHUTTER SPEEDS: 1/6000 to 30 sec, plus B (1/3-or 1/2-EV increments); shutter life not rated; flash sync to 1/180 second.

METERING: TTL metering using 77 -segment system; multi-segment (evaluative), centerweighted, and spot (approx. 5% of finder at center); range, 0–20 EV (at ISO 100).

ISO RANGE: ISO 100–12,800 (in 1- EV steps), expandable to ISO 100–25,600.

VIEWFINDER: Fixed eye-level pentaprism.

LCD: Fixed 3-in. TFT with 921,000-dot resolution, 15-step brightness adjustment.

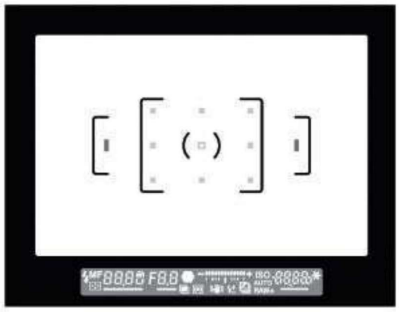
OUTPUT: Hi-Speed USB 2.0, mini-HDMI video, and composite video.

BATTERY: Rechargeable D-LI109 Li-ion; CIPA rating, 480 shots with optical viewfinder.

SIZE/WEIGHT: 5.1x3.8x2.8 in., 1.4 lb with a card and battery.

STREET PRICE: $850, body only; $900 with 18–55mm f/3.5–5.6 AL zoom lens; $1,050, with 18–55mm f/3.5–5.6 AL and 50–200mm f/4.0–5.6 AL zoom lenses.

INFO: www.pentaximaging.com



VIEWFINDER TEST: Accuracy, 100% (Excellent); magnification, 0.92X (Excellent).

Image by: Brian Smith

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AMATEUR PRO

Slim Pick

AN ADVANCED COMPACT PROVES POWERFUL, IN SPITE OF ITS SIZE

OVER THE PAST few years, we have seen a parade of compact cameras with what we have been calling large sensors. But "large" is relative, and what's more important than physical size is what you do with that surface area.

The newly developed 1-inch sensor in Sony's pocket-sized Cyber-shot DSC-RX100 ($648, street) measures precisely 13.2x8.8mm. To put this in perspective, it has about 2.7 times the surface area of the 1/1.7-inch sensor in Canon's slim PowerShot S100. Confused? Sensor nomenclature is tricky: The designations "1-inch" and "1/1.7-inch" correlate to the vacuum tubes once used in video cameras long ago.

That is, indeed, large for a compact. However, you'd have to multiply the surface area of the RX100's sensor by about 1.9 to match the sensor in a Micro Four Thirds body, or by 2.4 to catch up to the sensor in Canon's larger-bodied PowerShot G1 X, or by 2.8 to get to the APS-C sensors in Sigma's DP Merrill line of pocket compacts. And, of course, a full-frame sensor dwarfs this Sony's, with 7.4 times the surface area.

Still, Sony packed 20.2 megapixels into its 1-incher. To deliver plenty of light to it, the camera sports a Carl Zeiss-branded zoom lens with a relatively fast maximum aperture range, f/1.8–4.9,

SONY CYBER-SHOT DSC-RX100
WHAT'S HOT
F/1.8–4.9 lens; 1-inch CMOS sensor.
WHAT'S NOT
Priced like an entry-level DSLR.
WHO IT'S FOR
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Samsung NX1000 NEW!

Style and Perfection, All in One

Samsung's mirrorless NX1000 interchangeable lens camera sports a 20.3MP CMOS sensor, a 3-" TFT LCD & records HD video at 30 FPS. Built-in Wi-Fi connectivity lets you connect to a wireless network. Save photos & videos directly to a computer or cloud service while you shoot, email them, print them wirelessly, or upload them straight to Facebook, Twitter or YouTube. You'll never have to worry about losing a great shot, running out of storage space, or remembering to bring the right cable along.

Sony Alpha NEX-5N

Mini Marvel

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The AF 18-270 covers an angle of view equivalent to that of a 28mm wideangle to a 419mm ultra telephoto with just one lens, letting the user capture once-in-the-lifetime images of panoramic landscape images or close-up pictures of children smiling, without having to get too close to the subject and without having to change lenses.

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Vixia HF M500

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VIXIA HF M500 sports a pro-level Canon HD CMOS Pro Image Sensor and a Flat Touch Panel LCD. Intelligent IS and SuperRange Optical Image Stabilization designed for Canon's 10x HD Video Lens make every scene clear and steady, and new built-in features make it easy to give your videos added creativity.

XA10 Pro HD

The On-the-go Videographer's Dream

This feature-rich, professional model records Full HD 1080p to either its 64GB internal flash drive or 2 SDXC-compatible card slots. Including the ability to record simultaneously to both cards for instant backup. It includes a detachable handle for low-angle shooting and portability. A Genuine Canon 10x HD Video Lens delivers a wide, flexible zoom range (35mm equivalent range 30.4mm-304mm) and smooth, pleasing backgrounds.

Vixia HF R300

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and coverage equivalent to a 28–100mm full-frame lens.

A control ring around the barrel of the pancake lens works in tandem with the click-wheel on the back, lending a traditional feel to shooting in manual mode. It also provides flexibility in controlling other camera settings when shooting in other modes.

Does all this pay off? Read on.

In the Test Lab

The RX100's imaging ends up close to what you'd expect from an advanced compact. It managed to score an Extremely High rating in overall image quality at its lowest sensitivity of ISO 80. But for the majority of its sensitivity scale, it ends up with a Very High rating as resolution fell below our cutoff of 2250 lines. At ISO 400, resolution had dropped to 2170 lines; at its worst, at ISO 6400, it turned in 1930.

This places the Sony ahead of Canon's 12.1MP S100 slim compact, which resolved 2100 lines at ISO 80 and fell to 1300 lines at ISO 6400. But it also made us wonder why Sony didn't opt to keep the pixel count lower—say 16MP—to keep noise down.

Indeed, the RX100 produces noisier images at ISO 80 than the S100 does at ISO 400, and the Sony held noise to Low or better ratings only up to ISO 200. By ISO 800, noise was high enough to earn an Unacceptable rating and remained so up to the camera's top sensitivity of ISO 6400.

Some context: Noise becomes less noticable as image size decreases. For example, the candid portrait shown in the LCD on page 78 was shot at ISO 800. In a print this small, you'll have to strain to see the noise. But it's there, and in a bigger print, the noise would become distracting.

In our color accuracy test, the RX100 easily earned an Excellent score. It turned in an average Delta E of 6.6, well below our cutoff of 8 for top honors in this lower-is-better test.

While most DSLRs can capture full 1080p video only at up to 30 frames per sec, the RX100, due to its adherence to the new AVCHD version 2 spec, captures 1080p video at up to 60 fps.

In the Field

The RX100's body has a solid feel and compares well with cameras in this class. We wish it had some sort of grip, but we also know that the designers probably felt that any protrusion on the front would take away from the body's clean, attractive look. We tend to let practicality trump style, but also recognize that people looking for a compact camera like this might not.

The controls benefit from the ring around the lens. In manual or aperture-priority mode, this sets aperture for a classic feel, albeit without click-stops. Press the function button on the back, and the ring can now be used to adjust several settings that you can customize in the menus.

Just about the only control on the RX100 that screams compact is the zoom rocker. Like any such zoom control, this is less precise than a mechanical zoom ring. As a result, we found ourselves either tinkering endlessly or resolving to crop our images slightly after the shoot.

The autofocus is on par with the best compact cameras and some ILCs—enough for any casual shooting. While we wouldn't count on the RX100's ability to track fast-moving sports, we also wouldn't expect a professional sports shooter to pick this camera up for work.

The top burst speed is 10 frames per second at full resolution, but that's without continuous AF and with metering locked after the first exposure. With continuous metering and AF, bursts slow quite a bit. Still, it's nice to have the option for faster bursts in some situations.

TEST RESULTS

Video, is also on par with what you'll get from high-end compacts. The RX100 can shoot video at up to 1920x1080p60, and footage from the camera looks very nice. But, even with an f/1.8 lens, which will isolate a subject well, you can't expect as much versatility with this little compact as you can with a Micro Four Thirds or APS-C-based ILC or DSLR, let alone a full-frame DSLR. What

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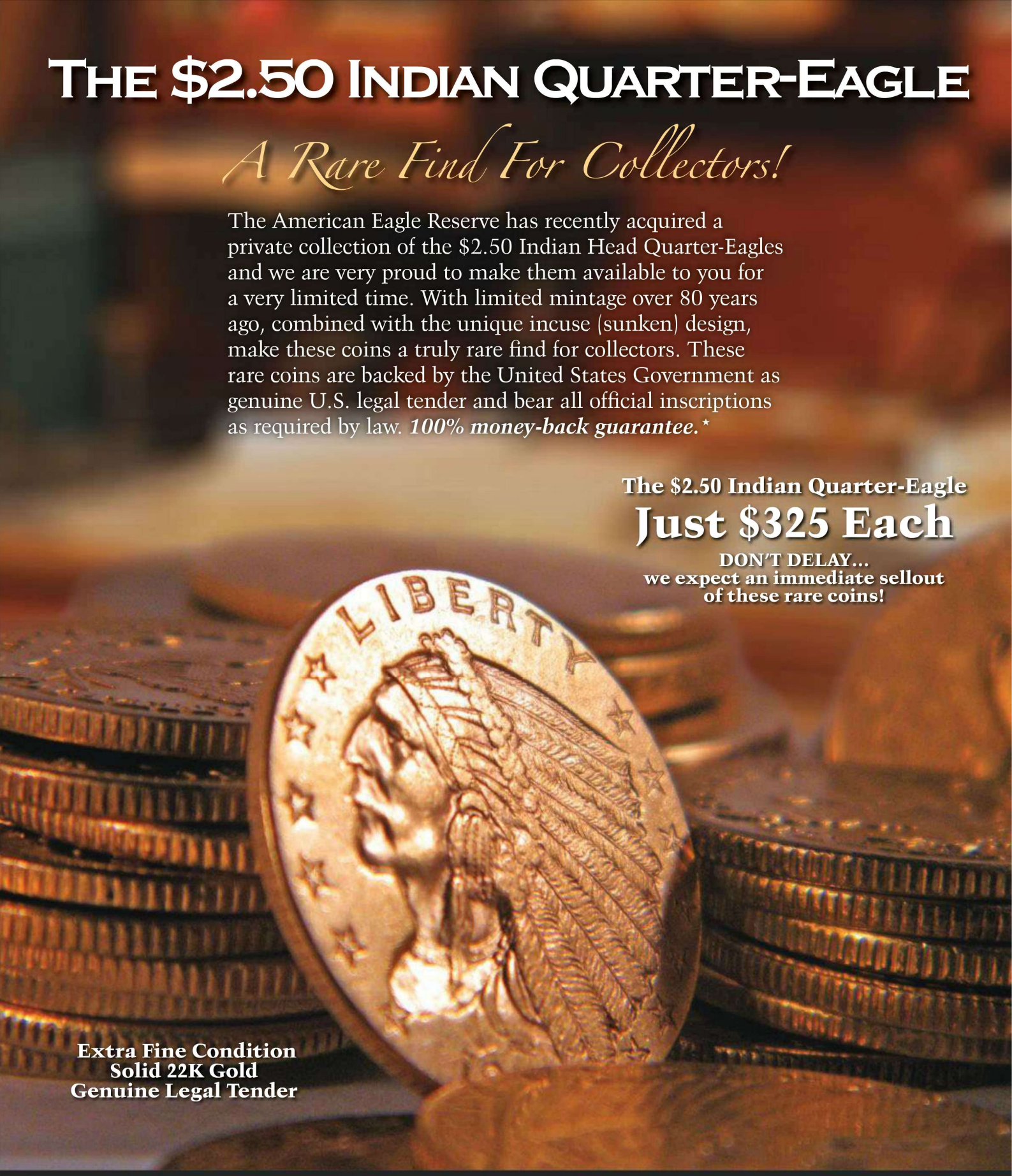

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you can expect is fine footage of casual get-togethers or simple projects, such as interviewing friends and family.

Like many Sony cameras, the RX100 includes Sweep Panorama, a mode in which the camera captures many shots in a burst and then stitches slivers of those images together to create a panorama. Another version of this process will create 3-D panoramas that you can play back on any 3-D TV using a cable connected to the mini-HDMI terminal.

Similarly, the Handheld Twilight scene mode captures multiple images and combines them automatically to minimize noise. The camera will also combine three images to create HDRs quick and easy. You have finer control over HDR with software, but you can still select from six levels of intensity for the HDR effect in the RX100. We were able to get realistic-looking results more often when we selected the intensity of the effect manually.

The Bottom Line

Sony's Cyber-shot RX100 is a worthy entry in the field of high-end compacts. Even though we feel that the camera's performance might have been better served keeping the pixel count down, we ended up with some great images.

Moreover, the experience of shooting with this camera is a pleasant one. The control ring on the lens serves its purpose well, and, if you would rather use a ring for manual focusing, you can change its function to suit your needs.

While we often shrug off a lot of the scene modes and digital filters found in compacts, we appreciate some of Sony's innovative modes, notably Handheld Twilight and Sweep Panorama. And if you're still learning about photography, you'll appreciate the RX100's camera-guide function, which explains various menu items and invites further exploration. If you're an advanced shooter, you can customize the RX100 extensively.

In the end, though, the Sony RX100 makes the most sense for reasonably knowledgeable, casual shooters looking for a nice, pocketable camera. *—Philip Ryan*

SPECIFICATIONS

IMAGING: 20.2MP effective, 1-inch (13.2x8.8mm) CMOS sensor captures images at 5472x3080 pixels with 12 bits/color in RAW mode.

STORAGE: Memory Stick Duo, PRO Duo, SD, and SDXC store JPEG, ARW RAW, and RAW + JPEG files.

BURST RATE: Full-sized JPEGs (Fine mode), up to memory card capacity at 2.5 fps (with continuous AF and metering enabled).

AF SYSTEM: TTL contrast detection with 25-point autoselect or 187selectable spot areas; single-shot and continuous AF with focus tracking and face detection.

SHUTTER SPEEDS: 1/2000 to 30 sec, plus B (1/3-EV increments).

METERING: TTL metering with multi-segment (evaluative), centerweighted, and spot (size of spot unspecified).

ISO RANGE: 100–6400 in 1-EV increments, plus ISO 80 and 125.

VIDEO: Records at 1920x1080 pixel resolution at 60 fps in AVCHD Version 2.0 (at 28, 24, or 17Mbps); 1440x1080 at 30 fps in MPEG-4; built-in stereo microphone; no microphone input.

FLASH: Built-in pop-up with autoflash covers approx. 1–56 feet with lens zoomed out to its widest; 1.8–21 feet with lens zoomed to telephoto; auto ISO.

LENS: 28–100mm (35mm equivalent) f/1.8–4.9 Carl Zeiss Vario-Sonnar T* zoom lens with SteadyShot optical image stabilization.

LCD: 3-in. TFT with 1.229-million-dot resolution; five-step brightness adjustment.

OUTPUT: USB 3.0, mini HDMI video (type C), composite video, and analog audio.

BATTERY: Rechargeable NP-BX1 Li-ion, CIPA rating 330 shots.

SIZE/WEIGHT: 4.0x2.4x1.4 in., 0.5 lb with a card and battery.

STREET PRICE: $648

INFO: www.sonystyle.com

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"Today I sell a huge variety of images on micro stock, especially local landmarks and travel scenes. One close-up I shot on my kitchen table in five minutes has netted me $1,500 in micro stock sales, and I've just signed on to shoot weddings for a studio in Lowell, Massachusetts. If you want to know what NYIP has done for me, the answer is simple—it has made me a better photographer and paved the way for a fulfilling career doing what I enjoy most."

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AMATEUR PRO

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ONE OF the Samyang-made manual-focus primes that have invaded the U.S. market under various marques, this speedy and inexpensive Pro Optic 14mm f/2.8 full-framer ($339, direct from Adorama) scales up to about a 21.5mm on an APS-C body. As of our production deadline, it is available in Canon, Four Thirds and Nikon mounts, but there may be a Sony and Pentax coming, too. Internally focusing, it boasts two ED glass and two aspheric elements, plus an Ultra Multi Coating (UMC), but doesn't accept filters.

As for AE coupling, our Nikon-mount test lens let us shoot in aperture-priority or manual, with focus confirmation. We easily set exposure with the Nikon D4 and D800's analog metering scales.

It is compact and light—very similar to the Canon 14mm f/2.8L ($2,359, street) but lighter than Nikon's 14mm f/2.8D ($1,700, street) by several ounces. It focuses very finely and smoothly.

The front element bulges forward, fisheye-style, almost escaping the nonremovable, petal-style lenshood. While attractively marked with large orange and white numerals, the lens lacks a depth-of-field scale—which would have been useful—and a lensmount index mark.

On our optical bench, the lens showed Excellent-range sharpness numbers that were comparable

CONTINUES ON PAGE 100

PRO OPTIC 14MM F/2.8 ED AS IF
WHAT'S HOT
Great price, high-speed, sharp.
WHAT'S NOT
No AF or filters, distortion issues.
WHO IT'S FOR
Anyone wanting high speed and luxuriously wide-angle views.

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SPECIFICATIONS

14MM (14.60mm tested), f/2.8 (2.87 tested), 14 elements in 10 groups. Focus ring turns 220 degrees.
DIAGONAL VIEW ANGLE: 115 degrees.
WEIGHT: 1.26 lbs. **FILTER SIZE:** None.
MOUNTS: Canon AF, Nikon AF, Four Thirds.
INCLUDED: Built-in lenshood.
DIRECT PRICE: $339–$350.
WEBSITE: adorama.com

TEST RESULTS

DISTORTION: 0.99% (Visible) barrel.
LIGHT FALLOFF: Gone by f/5.6.
CLOSE-FOCUSING DISTANCE: 10.75 inches.
MAXIMUM MAGNIFICATION RATIO: 1:12.08.

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VIBRATION CONTROL COMES TO A PRO FAVE

ON EVERY serious shooter's list of "essential" glass, you will see the classic 24–70mm f/2.8. Now, Tamron has gilded the lily with a heretofore absent feature: Vibration Compensation. Tamron pulled off this coup by using lighter and smaller glass elements in its design. Besides being the first stabilized lens in this zoom range, the 24–70mm f/2.8 DI VC lens ($1,300, street) is Tamron's first with a weather-resistant o-ring on the lensmount.

The lens focuses internally for an accessory-friendly, non-rotating barrel, and the AF motor is of the quiet ultrasonic variety. Plus, it offers a generous serving of specialized glass: three LD, four aspheric, and two XR (extra refractive index) glass elements.

While this almost 2-pound, 5.6-inch (extended) zoom might seem large (it takes 82mm filters; many in its class use 77mm), it actually falls mid-class in both size and weight—surprising when you consider that it's the only one with a stabilizer.

A nonstandard control layout puts the larger zoom ring on the outer rim and the manual-focus collar nearer the mount. Both generously sized rings turn

CONTINUES ON PAGE 104

TAMRON 24–70MM F/2.8 DI VC USD
WHAT'S HOT
First of its kind with vibration control
WHAT'S NOT
Edge vignetting at 24mm.
WHO IT'S FOR
Serious amateurs stepping up to a fast, stabilized zoom normal.

SATOSHI

SPECIFICATIONS

24–70MM (24.82-69.84mm tested), f/2.8 (f/2.81–2.91 tested), 17 elements in 12 groups.
Focus ring turns 110 degrees.
Zoom ring turns 90 degrees. Focal length marked at 24-, 35-, 50-, and 70mm.
DIAGONAL VIEW ANGLE: 84–34 degrees.
WEIGHT: 1.93 lbs. **FILTER SIZE:** 82mm.
MOUNTS: Canon AF, Nikon AF, Sony AF.
INCLUDED: Lenshood.
STREET PRICE: $1,300.
WEBSITE: tamron-usa.com

TEST RESULTS

DISTORTION: At 24mm, 0.60% (Visible) barrel.
At 50mm, 0.13% (Slight) pincushion.
At 70mm, 0.21% (Slight) pincushion.
LIGHT FALLOFF: At 24mm, evident at all apertures. At 50mm, gone by f/3.5.
At 70mm, gone by f/3.5.
CLOSE-FOCUSING DISTANCE: 13.70 inches.
MAXIMUM MAGNIFICATION RATIO: At 24mm, 1:9.03. At 50mm, 1:5.33. At 70mm, 1:4.23.
IMAGE STABILIZATION: 3 stops.

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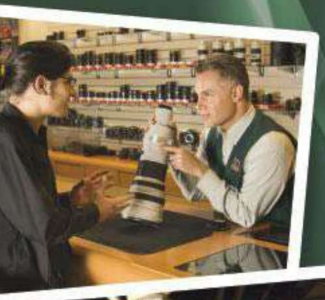

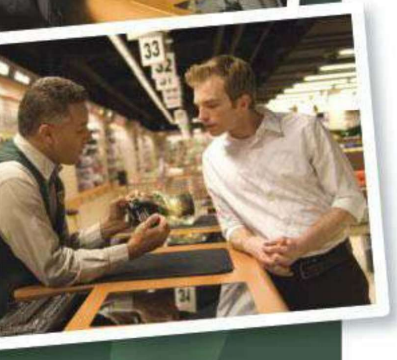

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- Super Slow Motion Movie Records 240fps

#CAPSE110 Black, Blue, Green, Pink, Red, Silver*

16 Mega Pixels

Canon Powershot G12

- 2.8" Vari-Angle LCD • 1280 x 720p HD Video Capture • Stereo Sound for Video
- 5x Optical Zoom • 4x Digital Zoom
- 6.1-30.5mm f/2.8-4.5 (35mm equiv: 28-140mm) • SD/SDHC/SDXC Card Slot
- RAW File Mode • Dim.: 4.41 x 3 x 1.9"

*#CAPSG12**

10 Mega Pixels

Canon PowerShot G1 X

- 3.0" Vari-Angle LCD • Full 1080p HD Video • Optical Viewfinder
- 4x Optical Zoom • 4x Digital Zoom
- 15.1-60.4mm f/2.8-5.8 (35mm equiv: 28-112mm) • SD/SDHC/SDXC Card Slot
- Manual & Numerous Other Shooting Modes

#CAPSG1X

14 Mega Pixels

Nikon Coolpix AW100

- 3.0" LCD • 5x Optical Zoom
- 5-25mm f/3.9-4.8 (35mm equiv: 28-140mm) • SD/SDHC/SDXC Card Slot
- Waterproof to 33' Deep
- Shockproof for Drops up to 5'
- Full HD 1080p Video with Stereo Sound

#NICPAW100 Black, Blue, Orange*

16 Mega Pixels

Panasonic Lumix DMC-ZS20

- 3.0" Smart Touch LCD Screen
- 1920 x 1080 Full HD Video Capture
- 20x Optical Zoom • 40x Digital Zoom
- 4.3-86mm f/3.3-6.4 (35mm equiv: 24-480mm) Leica DC Vario-Elmar Lens
- SDHC/SDXC Card Slot • Manual Control

#PADMCZS20 Black, Red, Silver, White*

14 Mega Pixels

SONY CyberShot DSC-W610

- 2.7" LCD • 720p HD Video
- iAuto Mode • 4x Optical Zoom
- 4.7-18.8mm f/2.8-5.9 (35mm equiv: 26-105mm) • Face Priority Function
- MS Duo, SD/SDHC/SDXC Card Slot
- Sweep Panorama Mode Up to 360°

#SODSCW610 Black, Blue, Green, Pink, Silver*

14 Mega Pixels

MEMORY CARDS

CF Compact Flash

	Delkin				Kingston				Lexar		Sandisk			
	125x	500x	700x	1000x	Std	Elite Pro 133x	Ultimate 266x	Ultimate 600x	400x	1000x	Ultra 30 MBs	Extreme 60 MBs	Extreme Pro 90 MBs	Extreme Pro 100 MBs
8GB	19.95	22.50	—	—	14.95	17.14	—	—	35.95	—	27.95	46.95	—	—
16GB	—	36.95	74.99	119.99	—	—	28.50	56.95	65.50	131.95	49.95	74.50	118.95	—
32GB	—	68.50	134.99	199.99	—	—	58.50	99.74	115.21	235.00	—	124.95	212.50	—
64GB	—	136.95	319.99	399.99	—	—	—	—	214.18	419.00	—	252.95	416.95	—
128GB	—	—	579.99	649.99	—	—	—	—	376.95	725.92	—	—	—	833.95
256GB	—	—	—	999.99	—	—	—	—	—	—	—	—	—	—

MSDUO Memory Stick Pro Duo

	Sony	
	Mark II	Pro-HG HX
2GB	12.50	—
4GB	18.99	—
8GB	—	34.95
16GB	—	54.95
32GB	—	99.95

SDXC-UHS-1 Extended Capacity

	Delkin		Lexar		Sandisk		
	600x	633x	Class 10 400x	Class 10 600x	Class 10 30 MBs	Class 10 45 MBs	Class 10 90 MBs
64GB	119.99	159.99	99.95	149.95	68.50	87.95	168.50
128GB	229.99	—	169.00	—	—	184.95	—

Note: Not all devices support SDXC cards

SDHC-UHS-1 Ultra High Speed

	Delkin		Kingston	Lexar		Sandisk		Panasonic	Sony
	600x	633x	Ultimate XX 35 MBs	Class 10 400x	Class 10 600x	Ultra 30 MBs	Extreme Pro 90 MBs	Gold 25 MBs	Pro Class 10	Pro Class 10
8GB	24.99	29.99	36.95	18.49	—	13.50	27.50	26.95	54.95	17.48
16GB	34.99	54.95	67.95	24.95	46.90	19.95	47.95	50.57	99.95	29.36
32GB	59.99	109.95	139.95	47.66	79.00	36.50	84.95	101.97	196.50	59.95

SD HC Secure Digital High Capacity

	Delkin		Kingston				Lexar		Sandisk				Sony		
	Pro Class 6	Pro Class 10	Standard Class 4	Standard Class 6	Ultimate X Class 10	Micro Class 4 Multi Kit	Std Class 4	Platinum II 100x	Std Class 4	Ultra	Extreme Class 10	Micro Class 4	Standard Class 4	Standard Class 10	Micro Class 4
4GB	—	7.95	—	—	—	6.50	6.45	7.95	6.50	8.23	12.95	6.95	5.80	—	7.19
8GB	12.95	10.04	5.95	16.95	15.95	6.95	8.95	8.95	8.95	11.10	14.95	—	7.95	10.99	9.95
16GB	—	14.95	9.95	—	19.95	10.95	14.95	16.95	12.95	—	26.50	13.50	15.95	17.99	—
32GB	—	29.95	19.95	—	45.95	24.95	24.95	28.44	24.50	—	45.95	24.50	—	29.95	—

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- One Leg, Column & Head Form Monopod • Removable Head
- Forged Aluminum Chassis • Pan & Tilt Control • Retractable Spikes in Feet

Model	Included Head	Load Capacity	Max. Height	Folded	Weight	SKU #	Price
Anodized Aluminum Series with Head							
AT-3400	BA-00T	6.6 lb	56.7"	15"	3 lb	#OBAT3400BA00	$149.95
AT-3410	BA-00T	6.6 lb	59.4"	16.5"	3.4 lb	#OBAT3410BA00	$224.95
AT-3420	BA-0T	11 lb	62.6"	17.7"	4.2 lb	#OBAT3420BA0T	$259.95
6x Carbon Fiber Series with Head							
CT-3400	BB-0T	12.4 lb	56.7"	15"	3 lb	#OBCT3400BB0T	$349.95
CT-3410	BB-0T	16.8 lb	59.4"	16.5"	3 lb	#OBCT3410BB0T	$399.95
CT-3420	BB-1T	22 lb	62.8"	17.7"	4 lb	#OBCT3420BB1T	$449.95
CT-3500	BB-0T	12.4 lb	53.3"	12.8"	2.5 lb	#OBCT3500BB0T	$349.95
CT-3510	BB-0T	16.8 lb	60.6"	15.5"	3.2 lb	#OBCT3510BB0T	$399.95
CT-3520	BB-1T	22 lb	64.8"	16.5"	4 lb	#OBCT3520BB1T	$469.95

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- 3" Touch Screen OLED
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- 4/3 Full Frame Zuiko Lenses
- SDHC/SDXC/UHS-1 Card Slot
- 3 Mode Image Stabilization
- 12,800 ISO & Built-In Flash
- 1080/60i HD Movie Capture
- All Metal Body with Full-Advanced Control
- Available in Black, Silver or White

*Kit with 17mm Zuiko Lens .....#OLEP317**
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12 Mega Pixels

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- SD/SDHC/SDXC Card Slot
- Touch Screen Control for Stills/Video
- Dust Reduction System
- Dolby Stereo Sound with Video
- Fastest Level of Light Speed AF
- MEGA O.I.S. (Optical Image Stabilizer)

Kit with 14-42mm G Vario Lens..... #PADMCGH2K1

16 Mega Pixels

Panasonic Lumix DMC-GX1 Mirrorless System Camera

- 1080/60i HD Video Capture
- 3.0" Touch Enabled LCD
- Micro 4/3 Lens Mount
- Built-In Flash, Hot Shoe and Mode Dial
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- Lumix LightSpeed Focusing
- Super O.I.S. (Optical Image Stabilizer)
- Available in Black or Silver

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SONY Alpha NEX-5N DSLR

- BIONZ Image Processor
- Tiltable 3.0" Touch LCD
- Accepts Sony E-Mount Lenses
- Up to 10 FPS Shooting
- 1080/60p HD Movie Capture
- SD/SDHC Card Slot
- Photo Creativity Touch
- Sweep Panorama
- HDMI Output
- Available in Black or Silver

Black with 18-55mm Lens.....#SONEX5NKB
Silver with 18-55mm Lens.....#SONEX5NKS

16 Mega Pixels

SONY Alpha SLT-A57 DSLR

- 3.0" 921,600-dot Tiltable LCD
- Full HD 1080p with AVCHD 2.0
- Sony A-mount Lens Mount (1.5x factor)
- MS/MS Pro & SD Media Slot
- Auto Portrait Framing
- ISO 100-16000
- Tru-Finder EVF

Body Only..... #SOSLTA57
Kit with 18-55mm Lens .....#SOSLTA57K

16 Mega Pixels

SONY Alpha SLT-A77 DSLR

- Upgraded BIONZ Image Processor
- 2nd Gen Translucent Mirror Design
- OLED Electronic Viewfinder
- Swivel/Tilt 3.0" LCD Screen
- Uses Sony Alpha Lenses (1.5x factor)
- Built-In GPS
- Dual Media Slots
- 1080p HD Movie Capture
- SteadyShot INSIDE Stabilization

*Body Only..... #SOSLTA77V**

24 Mega Pixels

OLYMPUS

Flash System

FL-300R Flash	169.95
FL-600R Flash	299.95
FL-50R Flash	499.95
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SRF-11 Ring Flash Set	559.95
TF-22 Twin Flash	449.95
STF-22 Twin Flash Set	739.95

Zuiko 4/3 System Digital Lenses

8/3.5 Fish-eye ED	799.99
35/3.5 Macro ED (52ø)	229.95
50/2.0 Macro ED (77ø)	499.95
150/2.0 ED (82ø)	2,499.95
300/2.8 ED	6,999.95
7-14/4.0 ED (72ø)	1,799.95
11-22/2.8-3.5 ED (72ø)	799.95
12-60/2.8-4 ED SWD (72ø)	999.95
14-42/3.5-5.6 ED (58ø)	249.95
18-180/3.5-6.3 ED (62ø)	499.95
35-100/2.0 ED (77ø)	2,499.99
40-150/4-5.6 ED (58ø)	279.95
50-200/2.8-3.2 ED SWD (67ø)	1,199.95
90-250/2.8 ED (105ø)	5,999.95
EC-14 1.4x Teleconverter	439.95
EC-20 2x Teleconverter	479.95
MF-1 OM Lens Adapter	83.95

PENTAX

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AF-360FGZ	
AF-540FGZ	

SMCP-DA Digital AF Lenses

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70/2.4 Limited "Pancake" (49ø)	
200/2.8 ED IF	
300/4.0 ED IF SDM (77ø)	
10-17/3.5-4.5 ED IF (77ø)	
12-24/4 ED AL IF (77ø)	
16-45/4 ED AL (67ø)	
16-50/2.8 ED AL IF SDM (77ø)	
17-70/4.0 AL IF SDM (67ø)	
18-55/3.5-5.6 AL II (52ø)	
50-135/2.8 ED IF SDM (67ø)	
50-200/4-5.6 ED WR (52ø)	
55-300/4-5.8 ED (58ø)	
60-250/4.0 ED IF SDM (67ø)	

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18-250/3.5-6.3 DT (62ø)	649.99
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70-200/2.8 G APO (77ø)	1,999.99
70-300/4.5-5.6 G (62ø)	999.99
75-300/4.5-5.6 (55ø)	249.99
1.4x Teleconverter	549.99
2x Teleconverter	549.99

OLYMPUS
50mm f/2 Macro ED Zuiko Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for macro photography and also as a portrait lens
- Magnification 1:2
- ED glass element
- Min. focus: 9.45"
- 52mm filter diameter
- Weight: 10.6 oz

PENTAX
18-135mm f/3.5-5.6 ED AL (IF) DC WR Digital Lens

- *Designed exclusively for Digital SLRs*
- SP Coating Repels Dust, Water, & Grease
- Weather resistant
- Quick-Shift Focus System
- Min. focus: 1.3'
- 62mm filter diameter
- Weight: 14.3 oz

SONY
HVL-F58AM Shoe-Mount Digital Flash

- Zoom Head (24-105mm)
- Bounce & Swivel Head
- Guide No. 190'
- TTL Dedication
- Vari-Power
- High-Speed Sync
- Auto WB Adjustment
- Wireless Ratio Control
- Weight: 15.6 oz

SONY
16-80mm f/3.5-4.5 Carl Zeiss T* DT Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for snapshots, portraits, interiors, or outdoor scenery
- 35mm equiv: 24-120mm
- Min. focus: 13.8"
- 62mm filter diameter
- Weight: 15.5 oz

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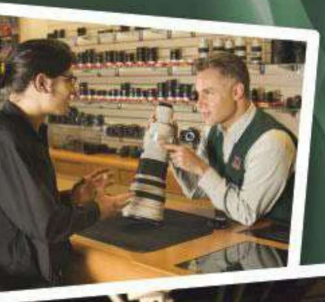

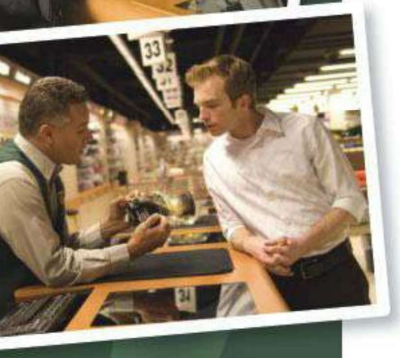

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Canon Digital Rebel T3i DSLR

- 3" Clear View Vari-Angle LCD
- Uses Canon EF Lenses (1.6x factor)
- SDHC/SDXC Card Slot
- 3.7 fps Continuous Shooting
- ISO 100-6400
- RAW + JPEG Files
- Full HD Movie Mode with Manual Exposure
- 63 Zone Dual-Layer System/9 Point AF

Expires 7-28-12

Body Only..... #CAEDRT3I ..... —
Kit with 18-55mm IS..... #CAEDRT3IK ..... ***$50 Rebate!***
T3 Kit *with 18-55mm IS* ..... #CAEDRT3K ..... ***$50 Rebate!***

18 Mega Pixels

Canon Digital Rebel T4i DSLR

- STM Lens Support for Quiet AF in Movies
- DIGIC 5 Image Processor
- 3.0" Vari-Angle Touch Screen LCD
- Uses Canon EF Lenses (1.6x factor)
- SDHC/SDXC Card Slot
- ISO 100-12800, Expandable to 25600
- Full HD Movie Mode with Continuous AF
- 5.0 FPS • Multi Shot Noise Reduction

Body Only..... #CAEDRT4I
Kit with 18-55mm IS..... #CAEDRT4IK
Kit with 18-135mm IS..... #CAEDRT4IKZ

18 Mega Pixels

Canon EOS-60D DSLR

- 1920 x 1080 HD Video Capture
- DIGIC 4 Image Processor
- SD/SDHC/SDXC Card Slot
- Works with all Canon EF & EF-S Lenses • Vari-Angle Clear View 3.0" Flip-Out LCD
- HDMI Output to HDTV
- 5.3 fps Continuous Shooting
- ISO 6400 - Expandable to 12800

Body Only..... #CAE60D ..... ***$100 Rebate!***
Kit with 18-135mm IS..... #CAE60D18135 ..... ***$100 Rebate!***
Kit with 18-200mm IS ..... #CAE60D18200 ..... ***$100 Rebate!***

Expires 7-28-12

18 Mega Pixels

Canon EOS-5D Mark III DSLR

- 3.2" Clear View High Resolution LCD
- DIGIC 5+ Image Processor
- 61-Point High Density AF
- Uses Canon EF Lenses
- Dual CF, SD Card Slots
- Extended ISO Range (50-102400)
- Built-In HDR & Multiple Exposure Modes
- Full HD 1080/30p and 720/60p Formats

Body Only..... #CAE5D3*
Kit with 24-105mm L IS..... #CAE5D324105
5D Mark II *Body Only*..... #CAE5D2..... ***In Stock***
5D Mark II *Kit with 24-105mm L IS*..#CAE5D224105..... ***In Stock***

22 Mega Pixels

Canon EOS-7D DSLR

- Record HD Video • 3" LCD
- Uses Canon EF Lenses
- CF, MD Card Slot
- Dust and Weather Resistant
- Selectable Video Exposure and Frame Rates
- ISO 100-6400 (expandable to 12800) • 8 fps Burst Mode
- 19-Point, All Cross-Type AF System

Body Only..... #CAE7D ..... ***$150 Rebate!***
Kit with 18-135mm IS..... #CAE7D18135 ..... ***$150 Rebate!***
Kit with 28-135mm IS..... #CAE7D28135 ..... ***$150 Rebate!***

Expires 7-28-12

18 Mega Pixels

Canon EOS-1Dx DSLR

- Dual DIGIC 5+ Image Processors
- Magnesium Alloy Body
- Eye-Level Pentaprism Viewfinder
- 3.2" LCD Monitor
- Uses Canon EF Lenses
- Dual CF card slots
- 1920 x 1080 HD Video Capture
- Live View Still and Video Recording
- 61-Point High Density Auto Focus

Body Only..... #CAE1DX*

18 Mega Pixels

Canon SLR Lenses and Flashes

* Double Rebates up to $550

with purchase of lens or speedlight together with a qualifying DSLR camera body/kit.

- EOS-60D Body
- EOS-60D Kit with 18-135mm IS Lens
- EOS-60D Kit with 18-200mm IS Lens
- EOS-7D Body
- EOS-7D Kit with 18-135mm IS Lens
- EOS-7D Kit with 28-135mm IS Lens
- EOS-5D Mark II or III Body
- EOS-5D Mark II or III Kit with 24-105mm IS Lens

Expires 6-30-12

EOS Flash System (USA)

270EX..... 430EX II ..... ***$20 Rebate****
270EX II ..... ***$10 Rebate**** 580EX II ..... ***$30 Rebate****
320EX..... ***$25 Rebate**** 600EX-RT.... ***$30 Rebate****
MR-14EX Ringlight..... ***$30 Rebate****
MT-24EX Twin Flash..... ***$50 Rebate****

EF-S Lenses for Digital Only (USA)

(Not compatible with full frame cameras)

60/2.8 USM Macro (52ø)..... ***$40 Rebate****
10-22/3.5-4.5 USM (77ø)..... ***$60 Rebate****
15-85/3.5-5.6 IS USM (72ø)..... ***$65 Rebate****
17-55/2.8 IS USM (67ø)..... ***$80 Rebate****
17-85/4-5.6 IS USM (67ø).....
18-55/3.5-5.6 IS (58ø).....
18-135/3.5-5.6 IS (67ø).....
18-200/3.5-5.6 IS (72ø).....
55-250/4.0-5.6 IS USM (58ø).....

EF Lenses (USA)

24/2.8 (58ø)..... 28/2.8 IS USM (58ø).....
24/2.8 IS USM (58ø)..... 35/2 (52ø).....
28/2.8 (52ø)..... 50/1.8 II (52ø).....
28/1.8 USM (58ø)..... ***$40 Rebate****
20/2.8 USM (72ø)..... ***$40 Rebate****
40/2.8 STM Pancake (52ø).....
50/2.5 Macro (52ø)..... ***$20 Rebate****
50/1.4 USM (58ø)..... ***$30 Rebate****
MP-E 65/2.8 1x-5x Macro (58ø)..... ***$70 Rebate****

EF Lenses (USA)

85/1.8 USM (58ø)..... ***$30 Rebate****
100/2 USM (58ø)..... ***$35 Rebate****
100/2.8 USM Macro (58ø)..... ***$40 Rebate****
135/2.8 (52ø).....
28-135/3.5-5.6 IS USM (72ø).....
70-300/4-5.6 IS USM (58ø).....
70-300/4.5-5.6 DO IS USM (58ø)..... ***$90 Rebate****
75-300/4.0-5.6 III (58ø).....
75-300/4.0-5.6 III USM (58ø).....

TS-E MF Lenses (USA)

17/4.0 L.... ***$170 Rebate**** 45/2.8 ..... ***$100 Rebate****
24/3.5 L II ***$150 Rebate**** 90/2.8 ..... ***$100 Rebate****

EF "L" Lenses (USA)

14/2.8 USM II..... ***$160 Rebate****
24/1.4 II (77ø)..... ***$120 Rebate****
35/1.4 USM (72ø)..... ***$100 Rebate****
50/1.2 USM (72ø)..... ***$120 Rebate****
85/1.2 USM II (72ø)..... ***$150 Rebate****
100/2.8 IS USM Macro (67ø)..... ***$70 Rebate****
135/2.0 USM (72ø)..... ***$75 Rebate****
180/3.5 USM Macro (72ø)..... ***$110 Rebate****

EF "L" Lenses (USA)

200/2.8 USM II (72ø) ..... 200/2.0 IS USM (52ø) .....
300/4.0 IS USM (77ø) ..... ***$90 Rebate****
300/2.8 IS USM II (52ø rear).....
400/5.6 USM (77ø).....
400/2.8 IS II (52ø rear).....
500/4 IS USM II (52ø rear).....
600/4.0 IS II (52ø rear).....
8-15/4.0 Fish-eye USM..... ***$100 Rebate****
16-35/2.8 USM II (82ø)..... ***$110 Rebate****
17-40/4.0 USM (77ø)..... ***$60 Rebate****
24-70/2.8 USM (77ø).....
24-70/2.8 II USM (82ø).....
24-105/4 IS USM (77ø).....
28-300/3.5-5.6 IS USM (77ø).....
70-200/4.0 USM (67ø).....
70-200/4.0 IS USM (77ø)..... ***$100 Rebate****
70-200/2.8 USM (77ø)..... ***$100 Rebate****
70-200/2.8 IS II USM (77ø)..... ***$200 Rebate****
70-300/4.0-5.6 IS USM (67ø)..... ***$100 Rebate****
100-400/4.5-5.6 IS USM (77ø)..... ***$110 Rebate****
1.4x III Teleconverter..... ***$35 Rebate****
2x III Teleconverter..... ***$35 Rebate****

Canon
600 EX-RT
Shoe-Mount Flash
$30 REBATE!*

- Dust and water resistance
- Guide No. 197'
- Wireless Radio Multiple Flash System
- Bounce and Swivel Head
- Zoom Head (20-200mm)
- 18 Custom Functions
- Weight: 15 oz

Canon
10-22mm f/3.5-4.5 EF-S USM Digital Lens
$60 REBATE!*

- *Designed exclusively for Digital SLRs*
- 35mm equivalent: 16-35mm
- Min. Focus: 9.5"
- 3 aspherical lens elements
- 3.5-27 f/Stop Range
- 77mm filter diameter
- Weight: 13.6 oz

Canon
24-70mm f/2.8 EF "L" USM Zoom Lens

- Sealed and gasketed against dust and moisture
- Internal Focusing
- UD Element
- Two Aspherical Elements
- 2.8-22 f/Stop Range
- Focus 1.25' to Infinity
- 77mm filter diameter
- Weight 33.6 oz

Canon
70-200mm f/2.8 EF "L" IS II USM
Telephoto-Zoom Lens
$200 REBATE!*

- Improved Optical Image Stabilization provides up to 4 stops correction
- Min. Focus: 3.9'
- Dust & moisture resistant
- 77mm filter diameter
- Weight: 52.56 oz

Nikon 1 J1 Mirrorless Digital Camera

- EXPEED 3 Dual Image Processor
- Interchangeable 1 NIKKOR Lens System
- 3.0" Anti-Glare Color LCD
- SD/SDHC/SDXC Card Slot
- Full HD (1080p) Movie Record Mode
- Motion Snapshot 1-Touch Photo Animation
- 10 fps Continuous Shooting in AF Mode
- Available in Black, Red, Silver or White
- Nikon Inc. limited warranty included

** Available in Black only

*Kit with 10-30mm VR**.....#NI1J1*.....**646.95**
Kit with 10mm & 10-30mm VR...#NI1J110.....**896.95**
Kit with 10-30 & 30-110mm VR..#NI1J11030.....**896.95**

10 Mega Pixels

Nikon D3200 DSLR

- EXPEED III Image Processor
- HD 1080p Video
- 3" LCD • Live View
- Uses Nikon AF Lenses (1.5x factor)
- SD/SDHC/SDXC Card Slot
- 11-point Autofocus
- Up To ISO 12800
- Nikon Inc. limited warranty included

D3200 Kit Black *w/18-55mm VR ...#NID32001855*.....**699.95**
D3200 Kit Red *w/18-55mm VR.....#NID32001855R*.....**699.95**
D3100 Kit *with 18-55mm VR.....#NID31001855*.....**646.95**

24 Mega Pixels

Nikon D5100 DSLR

- 1080p HD Movies with Full Time AF
- Uses Nikon AF Lenses (1.5x factor)
- 3.0" Vari-angle LCD
- SD/SDHC Card Slot
- ISO Sensitivity 100-6400
- In-Camera Special Effects Mode
- In-Camera HDR (High Dynamic Range)
- Fast 11-Point Autofocus System
- Nikon Inc. limited warranty included

Body Only.....#NID5100.....**746.95**
Kit with 18-55mm VR.....#NID51001855.....**846.95**

16 Mega Pixels

Nikon D7000 DSLR

- EXPEED 2 Image Processor
- 1080p HD Video Capture
- RAW + JPEG Still Image Capture
- Accepts Nikon AF Lenses (1.5x factor) • 3" LCD Monitor
- Twin SD/SDHC/SDXC Card Slots
- 39-point AF System
- RGB 3D Matrix Metering System
- i-TTL Flash + Speedlight Compatibility
- Nikon Inc. limited warranty included

Body Only.....#NID7000.....**1,199.95**

16 Mega Pixels

Nikon D800 DSLR

- 35.9x24mm CMOS FX Format Sensor
- 3.2" LCD Monitor
- Nikon F Mount Lens Mount
- CF & SD Dual Card Slots
- Optical Low-Pass Filter
- Eye-Level Pentaprism Viewfinder
- 1920 x 1080/30/25/24p HD Video Capture • Matrix/Center-Weighted/Spot Metering
- Built-In Flash + i-TTL Flash Control
- Nikon Inc. limited warranty included

Body Only.....#NID800.....**2,999.95**

36 Mega Pixels

Nikon D4 DSLR

- RAW, TIFF, JPEG, RAW+JPEG Files
- FX-format (full-frame) CMOS Sensor
- 1080p HD Broadcast Quality Video
- EXPEED3 Image Processor
- 3.2" LCD Screen with Live View
- Compatible with Most Nikkor Optics
- Matrix, Center-Weighted, Spot Metering • 100-12800 ISO
- CF Type 1 & XQD Compatible
- Nikon Inc. limited warranty included

Body Only.....#NID4.....**5,999.95**

16 Mega Pixels

Nikon SLR Lenses and Flashes

Call for Available Rebates & Promotions on Select Bodies, Lenses and Flashes!

AF Flashes

SB-400
SB-700.....**326.95**
SB-910.....**546.95**
R1 Wireless Twin Flash
R1C1 Wireless Twin Flash System

DX ED-IF Lenses for Digital Only

10.5/2.8 Fish-Eye
35/1.8 G AF-S (52ø).....**196.95**
40/2.8 G AF-S Micro (52ø).....**276.95**
85/3.5 G ED VR Micro (52ø)
10-24/3.5-4.5 G AF-S (77ø)
12-24/4 G AF-S (77ø)
16-85/3.5-5.6 G AF-S VR (67ø)
17-55/2.8 G AF-S (77ø)
18-55/3.5-5.6 G AF-S II (52ø)
18-55/3.5-5.6 G AF-S VR (52ø).....**196.95**
18-105/3.5-5.6 G AF-S VR (67ø).....**396.95**
18-200/3.5-5.6 G AF-S VR II (72ø).....**846.95**
18-300/3.5-5.6 G AF-S ED VR (77ø).....**999.95**
55-200/4-5.6 G AF-S (52ø)
55-200/4-5.6 G AF-S VR (52ø).....**246.95**
55-300/4.5-5.6 G AF-S VR (58ø).....**396.95**

D-Type AF Lenses

14/2.8 D ED
16/2.8 D (39ø) with Hood
20/2.8 D (62ø)
24/2.8 D (52ø)
24/1.4 G AF-S ED (77ø)
24/3.5 D ED PC-E (77ø)
28/1.8 G AF-S (67ø).....**699.95**
28/2.8 D (52ø)
35/2.0 D (52ø)
35/1.4 G AF-S ED (67ø)
45/2.8 D ED PC-E Micro (77ø)
50/1.8 D (52ø)
50/1.8 G AF-S (58ø).....**216.95**
50/1.4 D (52ø)
50/1.4 G AF-S (58ø)
60/2.8 D Micro (62ø) (1:1)
60/2.8 G AF-S ED Micro (62ø)
85/1.8 D (62ø) with Hood
85/1.4 D IF (77ø)
85/1.4 G AF-S (77ø)
85/1.8 G AF-S (67ø).....**499.95**
85/2.8 PC-E Micro (77ø)
105/2.8 G AF-S ED-IF VR Micro (62ø)
105/2.0 DC D with Hood (72ø)
180/2.8 D ED-IF (72ø)

D-Type AF Lenses

200/4 D ED-IF Micro with Case (62ø)
200/2 G AF-S ED-IF VR II (52ø)
300/4.0 D AF-S ED-IF (77ø)
300/2.8 G AF-S VR (52ø-R)
400/2.8 G AF-S VR ED (52ø)
500/4.0 G AF-S VR ED (52ø)
600/4.0 G AF-S VR ED (52ø)
14-24/2.8 G AF-S ED-IF.....**1,996.95**
16-35/4.0 G AF-S ED VR (77ø)
17-35/2.8 D AF-S ED-IF (77ø)
24-70/2.8 G AF-S ED-IF (77ø).....**1,886.95**
24-85/2.8-4.0 D IF (72ø)
24-85/3.5-4.5 G AF-S ED VR (72ø).....**599.95**
24-120/4.0 G AF-S ED VR (77ø).....**1,296.95**
28-300/3.5-5.6 G AF-S ED VR (77ø)
70-200/2.8 G AF-S ED-IF VR II (77ø).....**2,396.95**
70-300/4.0-5.6 G (62ø)
70-300/4.5-5.6 G-AFS VR (67ø).....**586.95**
80-200/2.8 D with Collar (77ø)
80-400/4.5-5.6 D VR (77ø)
200-400/4 G AF-S ED VR II (52ø)
TC-14E II (1.4x) Teleconverter
TC-17E II (1.7x) Teleconverter
TC-20E III (2x) Teleconverter

Nikon 24-70mm f/2.8 G AF-S ED-IF Zoom Lens

- Optimized for edge-to-edge sharpness on both the Nikon FX (full-frame) and DX-format image sensors
- Rugged construction, dust and moisture resistance
- Minimum focus 1.2'
- 77mm filter diameter
- Weight 32 oz

Nikon 18-200/3.5-5.6 DX G VR II AF-S ED-IF Digital Lens

- *Designed exclusively for Digital SLRs*
- 35mm equiv. 27-300mm
- **VR II** Vibration Reduction
- SWM (Silent Wave Motor)
- 3.5-22 f/Stop Range
- Focus 1.6' to Infinity
- 72mm filter diameter
- Weight 19.8 oz

Nikon 70-200/2.8 G AF-S ED-IF VR II Telephoto-Zoom Lens

- **VR II** Vibration Reduction
- 3.5-22 f/Stop Range
- SWM (Silent Wave Motor)
- Close Focusing to 4.6'
- 77mm filter diameter
- Weight 3.2 lbs

Nikon SB-910 Speedlight i-TTL Shoe Mount Flash

- Tungsten & Fluorescent Filters Included
- Guide No. 111.5'
- Simplified Graphic User Interface (GUI)
- Bounce & Swivel Head
- Zoom Head (17-200mm)
- Wireless Controller
- Weight 14.8 oz

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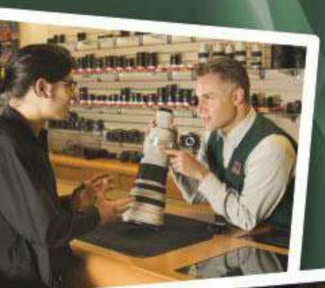

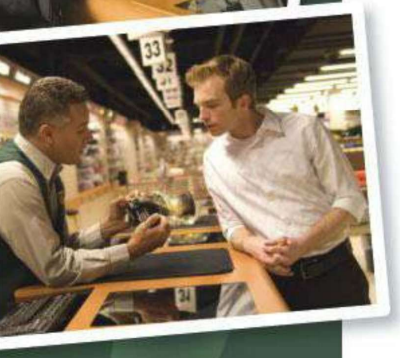

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Di for both digital and film SLR cameras • **Di-II** for Digital SLRs Only • **Di III** for mirror-less cameras Only

C = Canon N = Nikon P = Pentax SM = Sony/Minolta SE = Sony E Mount *** Price After Rebate* *Exp. 9-30-12*

		SKU #	Available for	Rebate	Price
Di-II	60/2.0 LD IF Macro (55ø)	#TA602DI*	C, N, SM	$100	424.00**
Di	90/2.8 Macro (55ø)	#TA9028M*	C, N, P, SM	$50	449.00**
Di	180/3.5 LD IF Macro (72ø)	#TA18035*	C, N, SM	$50	689.00**
Di-II	10-24/3.5-4.5 (77ø)	#TA102435*	C, N, P, SM	$50	449.00**
Di-II	17-50/2.8 XR LD IF Aspherical (67ø)	#TA175028*	C, N, P, SM	$75	424.00**
Di-II	17-50/2.8 XR VC LD IF Asph. (67ø)	#TA175028*Q	C, N	$100	549.00**
Di-II	18-200/3.5-6.3 (62ø)	#TA1820035*	C, N, P, SM	—	299.00
Di-III	18-200/3.5-6.3 VC (62ø) Black or Silver	#TA1820035S*	SE	—	739.00
Di-II	18-270/3.5-6.3 VC (72ø)	#TA1827035*	N	—	CALL
Di-II	18-270/3.5-6.3 VC PZD (62ø)	#TA18270*	C, N, SM	$100	549.00**
Di	24-70/2.8 VC USD (82ø)	#TA247028*	C, N, SM	—	1,299.00
Di	28-75/2.8 XR (67ø)	#TA287528*	C, N, P, SM	$25	474.00**
Di	28-300/3.5-6.3 XR LD (62ø)	#TA2830035XD*	C, P, SM	—	419.00
Di	28-300/3.5-6.3 XR VC (62ø)	#TA2830035*	C, N	—	629.00
Di	70-200/2.8 LD IF Macro (77ø)	#TA7020028M*	C, N, P, SM	—	769.00
Di	70-300/4.0-5.6 VC USD (62ø)	#TA70300*	C, N, SM	$100	349.00**
Di	75-300/4.0-5.6 LD (62ø)	#TA753004*	C, N, SM	—	164.00
Di	200-500/5-6.3 LD IF (86Cø)	#TA2005005*	C, N, SM	—	949.00
	1.4x SP AF Pro Teleconverter	#TA14XP*	C, N	—	224.00
	2x SP AF Pro Teleconverter	#TA2XP*	C, N	—	254.00

Tokina AF LENSES

DX – for Digital SLRs Only **FX** – Designed for full frame DSLRs *** Price After Rebate* *Exp. 9-30-12*

** Also Available for Sony Alpha DSLR

		Canon EOS	Nikon AF	Rebate	Price
FX	100/2.8 Pro D Macro (52ø)	#TO10028PCAF	#TO10028PNAF	—	489.00
DX	10-17/3.5-4.5 ATX Fisheye	#TO1017735CAF	#TO1017735NAF	—	669.00
DX	11-16/2.8 Pro (77ø) **	#TO111628PDXC	#TO111628PDXN	$40	659.00**
DX	12-24/4.0 Pro II (77ø)	#TO12244DXC	#TO12244DXN	—	599.00
FX	16-28/2.8 Pro	#TO1628FXC	#TO1628FXN	$100	749.00**
FX	17-35/4 Pro (82ø)	#TO1735F4FXC	#TO1735F4FXN	$70	599.00**

FLASHES

Metz

28 CS-2 Digital Slave Shoe Mount Flash	139.99
44 AF-1 Digital Shoe Mount Flash	199.99
50 AF-1 TTL Digital Shoe Mount Flash	249.99
58 AF-2 TTL Digital Shoe Mount Flash	399.99
45 CL-4 TTL Digital Handle Mount Flash	519.99
45 CL-4 TTL Digital Handle Mount Flash Kit	699.99
76 MZ-5 TTL Digital Handle Mount Flash	1,039.99

Quantum

Q-flash TRIO	875.00
Q-flash T5D-R	706.00
Q-flash T5D-R with Turbo SC Battery & Charger	1,172.00
Q-flash T5D-R with Turbo 3 Battery Kit	1,303.50

Batteries

Battery 1	224.00	Turbo Blade	466.00
Turbo SC	466.00	Turbo 3	624.00

SUNPAK

E-Flash Flat Panel Kit #SUFP38	58.95
PF20XD Digital Slave Shoe Mount Flash	44.95
RD-2000 Shoe Mount Flash	64.95
DF3000 Digital for Canon, Nikon, Sony	79.95
PZ-4000 AF TTL Shoe Mount f/Canon, Nikon	74.95
PZ-40x II AF TTL Shoe Mount f/Nikon (Silver)	69.95
PZ-42x AF TTL Shoe Mount for Canon, Nikon	145.95
622 Super Pro TTL Handle Mount Flash	196.95
622 Super Kit with Wide Angle Head	199.95

Vivitar

285HV Professional Auto	89.95
Pearstone SB-4 AC Adapter for 285HV #PESB4	14.95

SIGMA AF LENSES & FLASHES

New! Instant Rebates up to $200 Expires 7-31-12 ** Price After Rebate

DC – for Digital SLRs Only • **DG** – Optimized for Digital SLRs

H – HSM Model with Canon, Nikon, Sigma
R – Rear Slip-in Gelatin Filter Slot

		Canon	Nikon	Pentax	Sigma	Sony	Rebate	Price
DC	4.5mm f/2.8 EX Circular Fisheye HSM R	#SI4528EXDCC	#SI4528EXDCN	#SI4528EXDCP	#SI4528EXDCSI	#SI4528EXDSO	—	899.00
DG	8/3.5 EX Circular Fisheye R	#SI835CA	#SI835NA	—	#SI835SI	#SI835SO	—	899.00
DC	10mm f/2.8 EX Fisheye HSM R	#SI1028EXDCC	#SI1028EXDCN	#SI1028EXDCP	#SI1028EXDCSI	#SI1028EXDCSO	—	649.00
DG	15/2.8 EX Diagonal Fisheye R	#SI1528DGCAF	#SI1528DGNAF	#SI1528DGPAF	#SI1528DGSA	#SI1528DGMAF	—	609.00
DG	20/1.8 EX DF RF Aspherical (82ø)	#SI2018CAF	#SI2018NAF	#SI2018PAF	#SI2018SA	#SI2018MAF	—	629.00
DG	24/1.8 EX DF Aspherical Macro (77ø)	#SI2418MCAF	#SI2418MNAF	#SI2418MPAF	#SI2418MSA	#SI2418MMAF	—	549.00
DG	28/1.8 EX DF Aspherical Macro (77ø)	#SI2818MCAF	#SI2818MNAF	#SI2818MPAF	#SI2818MSA	#SI2818MMAF	—	449.00
DC	30mm f/1.4 EX HSM (62ø)	#SI3014DCCAF	#SI3014DCNAF	#SI3014DCPAF	#SI3014DCSA	#SI3014DCMAF	—	489.00
DG	50mm f/1.4 EX (77ø) H	#SI5014C	#SI5014N	#SI5014PE	#SI5014SI	#SI5014SOM	$50	449.00**
DG	50/2.8 EX Macro (55ø)	#SI5028MDGCAF	#SI5028MDGNAF	#SI5028MDGPAF	#SI5028MDGSA	#SI5028MDGMAF	—	369.00
DG	70/2.8 EX Macro (62ø)	#SI7028MDGCA	#SI7028MDGNA	#SI7028MDGPA	#SI7028MDGSA	#SI7028MDGSAQ	—	499.00
DG	85/1.4 EX HSM (77ø)	#SI8514C	#SI8514N	#SI8514P	#SI8514SI	#SI8514S	—	969.00
DG	105/2.8 EX Macro OS HSM (62ø)	#SI10528MDGCE	#SI10528MDGNQ	—	#SI10528MDGS	#SI10528MDGSM	$200	769.00**
DG	150/2.8 EX APO Macro OS HSM (72ø)	#SI15028AMOC	#SI15028AMON	#SI15028AMOP	#SI15028AMSI	#SI15028AMOS	—	1,099.00
DG	300/2.8 APO EX HSM	#SI30028DGCAF	#SI30028DGNAF	#SI30028DGPAF	#SI30028DGSA	#SI30028DGMAF	—	3,399.00
DG	500/4.5 APO EX HSM	#SI50045DGCAF	#SI50045DGNAF	#SI50045DGPAF	#SI50045DGSA	#SI50045DGMAF	—	4,999.00
DC	8-16/4.5-5.6 HSM	#SI8164556CA	#SI8164556NI	#SI8164556PE	#SI8164556SI	#SI8164556SO	—	699.00
DC	10-20/4-5.6 EX HSM (77ø)	#SI102045DCAF	#SI102045DNAF	#SI102045DPAF	#SI102045DSA	#SI102045DMAF	—	479.00
DC	10-20/3.5 EX HSM (82ø)	#SI102035C	#SI102035SN	#SI102035P	#SI102035SG	#SI102035S	$50	599.00**
DG	12-24/4.5-5.6 EX Aspherical HSM II	#SI122445C	#SI122445N	#SI122445P	#SI122445SI	#SI122445S	$75	874.00**
DC	17-50/2.8 EX OS HSM (77ø)	#SI175028CA	#SI175028NI	#SI175028PE	#SI175028SI	#SI175028SO	—	669.00
DC	17-70/2.8-4.0 OS Macro HSM (72ø)	#SI177028DCC	#SI177028DCNQ	#SI177028DCP	#SI177028DCSI	#SI177028DCSM	$50	419.00**
DC	18-50/2.8-4.5 OS HSM (67ø)	#SI185028DOC	#SI185028DON	#SI185028DOP	#SI185028DOSG	#SI185028DOS	—	199.00
DC	18-125/3.8-5.6 OS (Optical Stabilizer) (67ø) H	#SI18125350SC	#SI18125350SN	#SI18125350SP	#SI18125350SI	#SI18125350SS	—	339.00
DC	18-200/3.5-6.3 OS II HSM (72ø)	#SI1820035CQ	#SI1820035NQ	#SI1820035P	#SI1820035SAQ	#SI1820035SQ	$50	449.00**
DC	18-250/3.5-6.3 OS HSM (72ø)	#SI1825035C	#SI1825035N	#SI1825035CP	#SI1825035S	#SI1825035CSN	—	479.00
DG	24-70/2.8 EX IF HSM (82ø)	#SI247028C	#SI247028NF	#SI247028PS	#SI247028S	#SI247028SM	$75	824.00**
DC	50-150/2.8 EX APO OS HSM (77ø)	#SI5015028CA	#SI5015028NA	—	#SI5015028SAF	—	—	1,099.00
DC	50-200/4-5.6 OS HSM (55ø)	#SI5020045DOC	#SI5020045DON	#SI5020045DOP	#SI5020045DSG	#SI5020045DOS	—	159.00
DG	50-500/4.5-6.3 APO OS HSM (95ø)	#SI505004563C	#SI505004563N	#SI505004563P	#SI505004563SA	#SI505004563SM	—	1,659.00
DG	70-200/2.8 EX APO OS HSM (77ø)	#SI7020028CQ	#SI7020028NI	#SI7020028P	SI7020028SIQ	#SI7020028SOQ	$100	1,299.00**
DG	70-300/4-5.6 DL Macro Super II (58ø)	#SI703004SCAF	#SI70300456N	#SI703004PAF	#SI703004SA	#SI703004MAF	—	169.00
DG	70-300/4-5.6 APO Macro Super II (58ø)	#SI703004DGCA	#SI70300456AN	#SI703004DGPA	#SI703004DGSA	#SI703004DGMA	—	239.00
DG	70-300/4-5.6 OS (62ø)	#SI7030045C	#SI7030045N	#SI7030045P	#SI7030045S	#SI7030045SM	$50	309.00**
DG	120-300/2.8 EX APO OS HSM (105ø)	#SI12030028C	#SI12030028N	#SI12030028P	#SI12030028SI	—	—	3,199.00
DG	120-400/4.5-5.6 APO OS HSM (77ø Rear)	#SI120400C	#SI120400N	#SI120400P	#SI120400S	#SI120400SQ	$100	899.00**
DG	150-500/5-6.3 APO OS HSM	#SI150500C	#SI150500N	#SI150500P	#SI150500S	#SI150500M	$100	969.00**
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DG	2x EX APO Tele-Converter	#SI2XDGCAF	#SI2XDGNAF	#SI2XDGPAF	#SI2XDGSA	#SI2XDGMAF	—	299.00
DG	EF-610 ST	#SIEF610STC	#SIEF610STN	#SIEF610STP	#SIEF610STSI	#SIEF610STS	—	165.00
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81A, B, KR3, 6, 12, 15	26.50	26.50	36.00	42.00	49.00
KB1.5, 3, 6, 12, 15, 20	28.50	28.50	35.00	40.50	47.50
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The Avalanche brightening pen was developed by leading scientists using advanced teeth whitening technology. There have been teeth–whitening products before, but they were generally expensive and a real hassle to use- with gooey, bad-tasting pastes and trays that you had to leave in your moth for a long time. This is different. It's designed to quickly whiten teeth, clean away surface stains and, with repeated and regular use, create a brighter, healthier and more attractive smile.

The exclusive sponge applicator insures better gel contact with the tooth's enamel surface. The unique pen design makes it easy to use with just one hand and there's no danger of gel splatter on your clothes or furniture. The gel has a fresh, minty taste and does not cause sensitivity. Unlike trays or strips, it enables you to zero in on problem areas. Best of all it can improve your teeth whiteness up to four shades in as little as two weeks!

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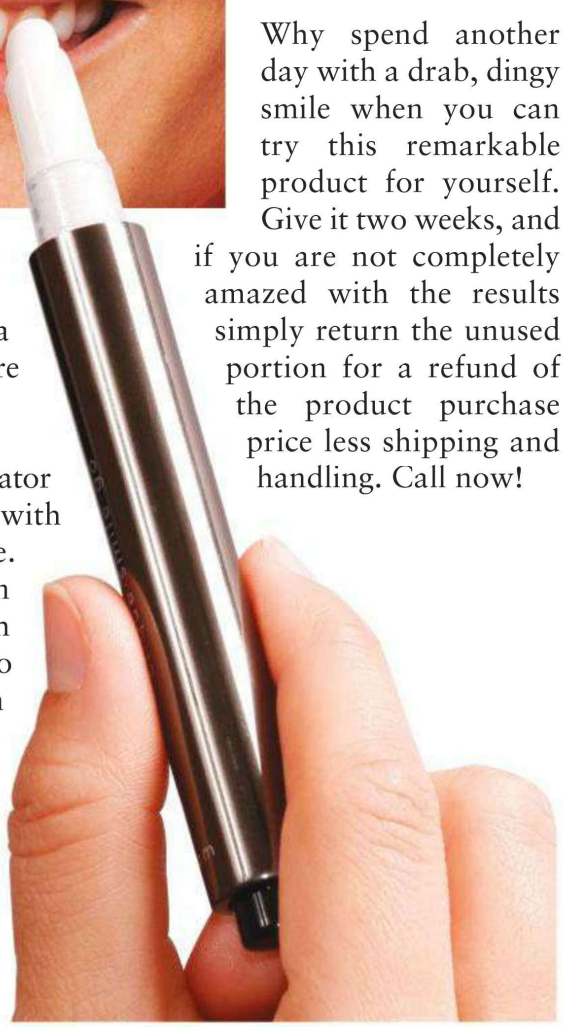

Comparison of Teeth Whitening Processes

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CONTINUED FROM PAGE 76

for about a second to toggle between selecting an AF point and changing the other settings. Once we got used to it, we found this efficient, though not intuitive.

Exposure compensation allows for up to +/– 5 EV in steps of 1/2- and 1/3-stops. Autobracketing allows for only three frames in +/–2 EV steps, but for a camera in this class, that's good.

The automatic HDR function does a good job of creating images with wide dynamic ranges, and its auto-align function works well. With the intensity of the effect on low or medium settings, our results were fine.

The burst speed? Up to 6 frames per second for up to 30 JPEGs or 8 RAW shots. Continuous AF does a decent job of keeping up with moving subjects, similar to other cameras in its price range, but you shouldn't expect the same level of subject tracking that you'd get from a pricier DSLR.

The K-30 can capture very nice video at up to 1920x1080 pixels at up to 30 frames per second. Footage we shot was plenty sharp, with solid color saturation and only minimal video artifacts. Sadly, there's no mic input, so you'll have to run separate audio or accept that of the built-in monaural microphone.

Bottom Line

Pentax's DSLRs have always formed their own niche in the camera market. While Canon and Nikon's lines tend to mirror one another, Pentax's "entry-level" DSLRs have always tended to be more feature-laden than the most basic models from the Big Two. For instance, while last year's Canon EOS Rebel T3i costs about $150 less than the Pentax K-30 when both are paired with their 18–135mm f/3.5–5.6 kit lenses, the T3i and its lens lack the K-30's weathersealing and can't keep up with its rapid bursts.

The K-30 has technology from Pentax's new owner, Ricoh: Focus Peaking, found in higher-end Ricoh compacts. When focusing manually in live view, you see a halo of contrast around the subject as it comes into focus. This seems strange at first but proves useful, especially in setting up a video clip.

Furthermore, the K-30's sensor-shift image stabilization, which afforded our testers an average of 3 stops of hand-holding leeway, works with any lens you mount on the camera. Shoot with a Lensbaby? It's stabilized. Try a 1950s-era screw-mount lens? Stabilized. With Canon or Nikon, you'll have to shell out more bucks for optically stabilized lenses.

If you like the idea of a cost-effective DSLR that is weather-sealed, has enough resolving power to satisfy nearly all photographic needs, and has a faster burst rate than most of its price range, you won't go wrong with the K-30. —*Philip Ryan*

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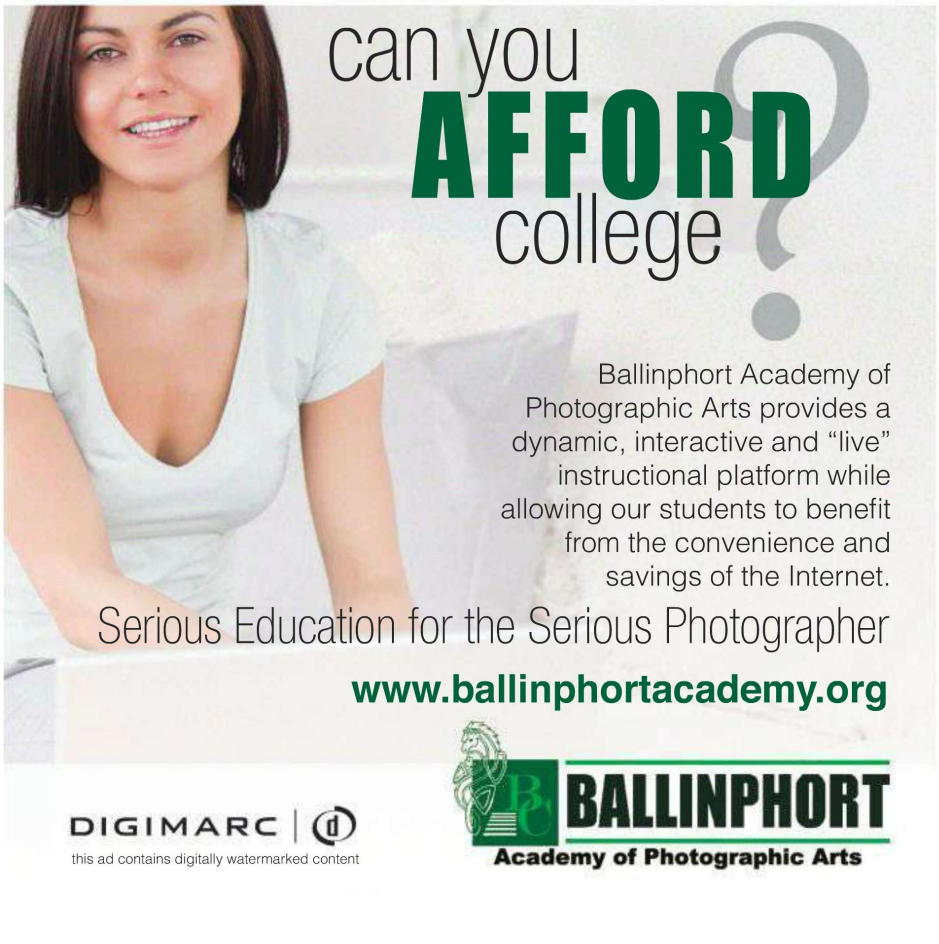
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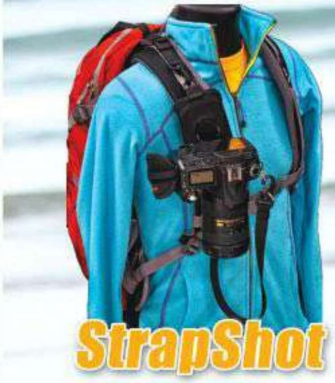

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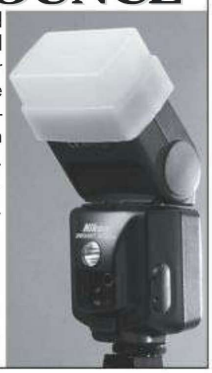

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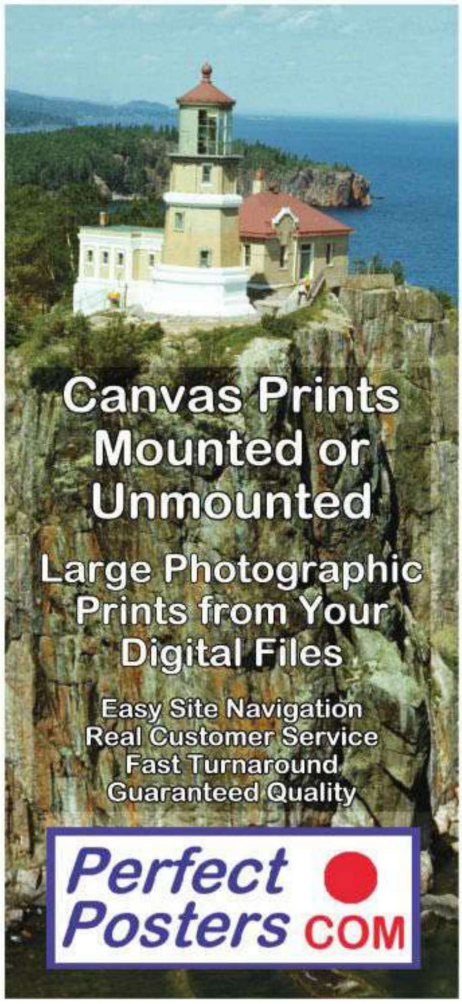

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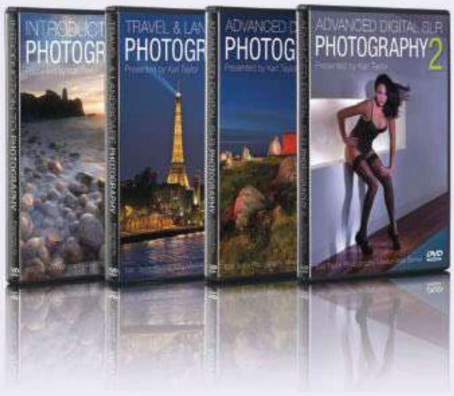

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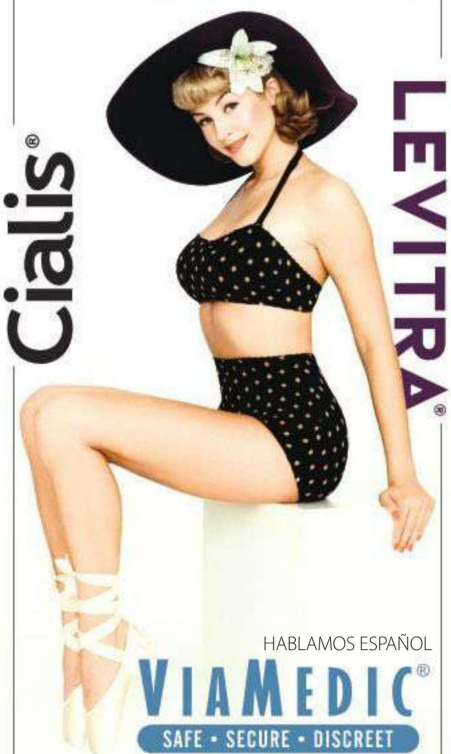

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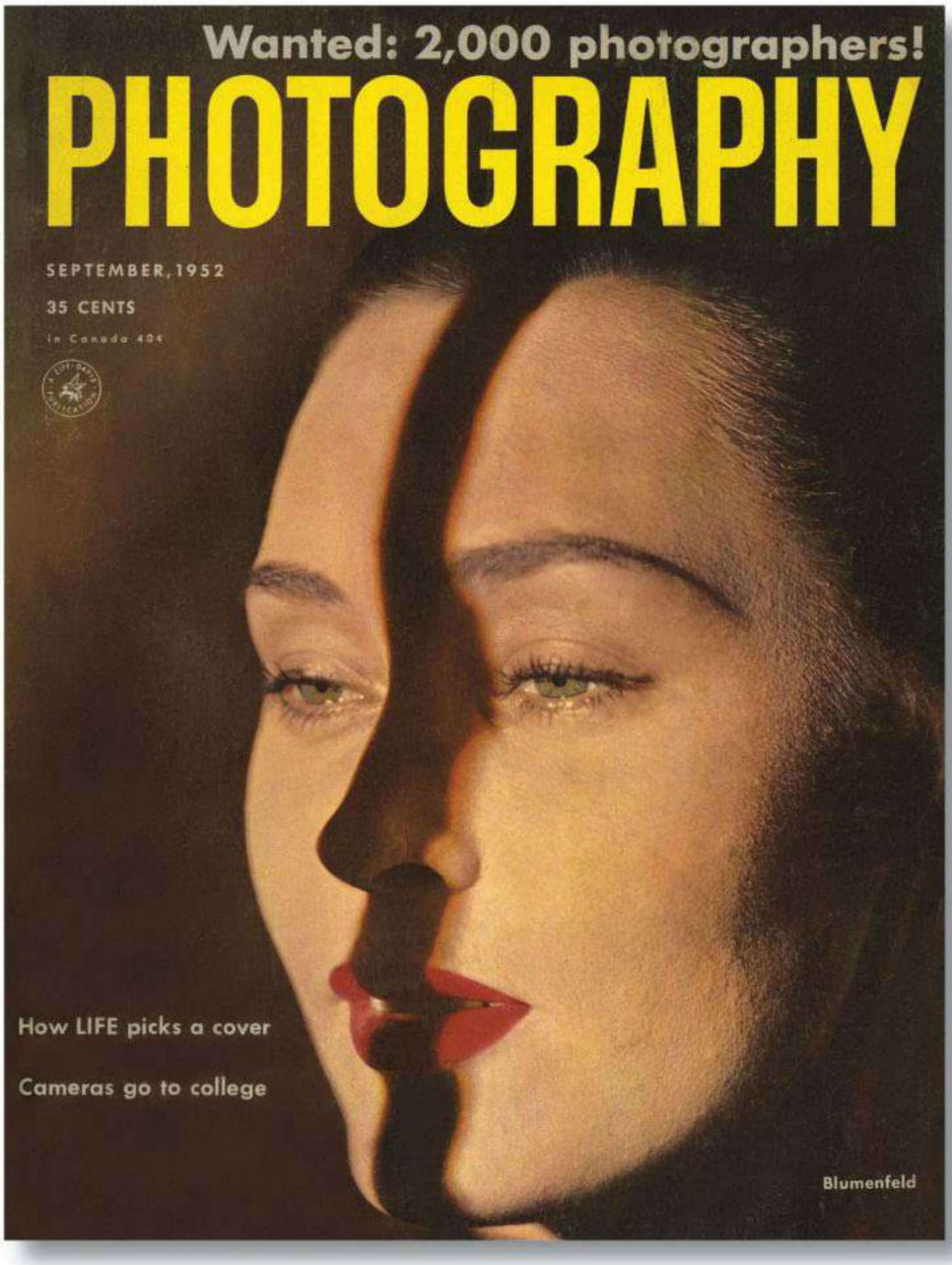

Well-Stocked Tool Kit

Opportunities in the growing field of television were hailed in this article on a potential new market for professional photographers. The author, William O. Crampton, set up the photo department at WSYR-TV in Syracuse, NY. Shown here: The three-man photo staff at the station, plus an impressive array of equipment, including a Polaroid Model 95 (the basic original) in the center of the picture.

Black Gold Mine

Back in the days when the U.S. had oil aplenty, Tom Hollyman, a photographer/editor for *Holiday* magazine, was asked by Shell Oil Company to produce a photographic portrait of the company and its operations. Among his dramatic images is this view of the Shell refinery in Wood River, Ill., which worked around the clock. Hollyman made this photo using a view camera and a 5-second exposure at f/8.

Experimental Portrait

What happens when a top fashion shooter plays around? He takes an unusual photo. Edwin Blumenfeld darkened his studio, leaving only a 750-watt keg spot fitted with a projection lens focused on model Nova Gilmer. He inserted a narrow metal strip between the lamp and the projection lens to produce the line down her face, then positioned a Deardorff View camera with a 14-inch f/6.3 Kodak Ektar lens at 45 degrees to her. Exposure on 8x10 Kodachrome Type B: 1 sec at f/11.

60 YEARS AGO

Douglas Brayshaw outfitted a trailer as a traveling studio.

Polaroid Turns Pro

Although instant photography was widely welcomed by pros, Polaroid cameras were geared to amateurs until the arrival of the Polaroid Model 110 Pathfinder. With a pro-quality Wollensak Raptar f/4.5 lens, Rapax sync shutter, and coupled Kalart rangefinder, it became an instant success. Today this camera remains both a desirable user model and a valuable collector's item. The price reflected its quality: approximately $250.

Real Live Models

One of the leading photo schools of the time was School of Modern Photography in New York. Apart from modern equipment to work with, the school also offered a chance to work with professional models as part of its fashion photography course.

—Harold Martin

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PRO OPTIC 14MM F/2.8 ED AS IF

CONTINUED FROM PAGE 83

to the Canon's and very slightly better than Nikon's.

The Visible-range barrel distortion (0.99%), was uncomfortably close to the Very Visible range—a performance on par with 14mm f/2.8s from decades ago. Tested on an APS-C body, the barrelling dropped to a still objectionable 0.83%. To compare, Canon's much pricier lens showed just 0.27% (Slight) barreling.

Also disappointing was the Pro Optic's subject magnification of 1:12, which paled beside the Canon's 1:5.7 and Nikon's 1:6.7.

In the field, focusing was initially an issue. At maximum aperture and close-focusing distances, neither the viewfinder nor the focusing scale produced consistent sharpness. Our best images came when using the camera's focus-confirmation light or magnifying the live-view image. If you have problems focusing, set approximately a 2-foot subject distance at f/11 and forget about it. Everything from about 1 foot to infinity will be sharp.

As long as you can deal with its lack of filters and the distortion, you can have lots of fun with this lens. Certainly worth the money—miniscule by fast 14mm standards—the Pro Optic's scene-spanning 115-degree angle of view and great low-light performance are big bonuses.

—Julia Silber

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

14 MM

Size	5x7	8x10	11x14	16x20	20x24
2.8	97.1	96.2	94.2	90.4	86.0
4.0	97.2	96.3	94.3	90.7	86.6
5.6	97.3	96.4	94.4	91.0	87.0
8.0	97.4	96.6	94.7	91.4	87.7
11.0	97.0	96.0	93.9	89.9	85.3
16.0	96.4	95.3	92.7	87.9	82.1
22.0	95.5	94.2	90.9	84.5	76.6

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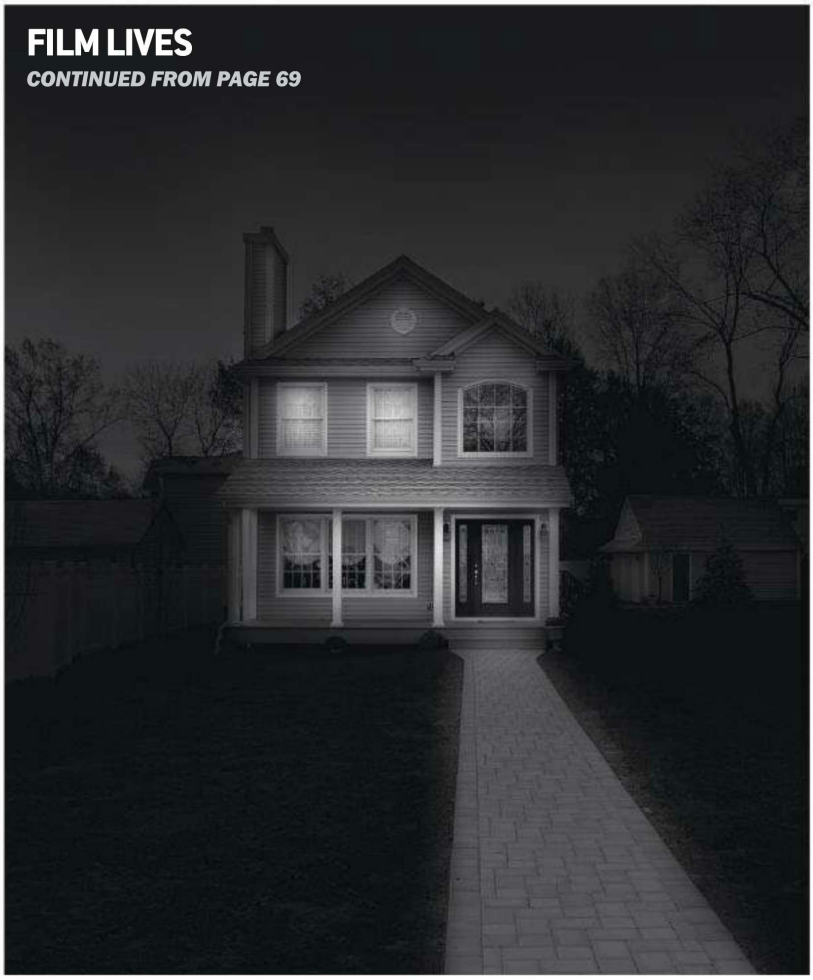

"WAYNE FLOOD ZONE – 4am" Massaia's 2011 photo is richly printed in its original form. He used a homemade platinum/palladium emulsion to print the 32x42-inch image. To watch a brief documentary about his creative process, use our new PopPhoto Interactive smartphone app or go to PopPhoto.com/massaia.

ing. His are among perhaps the largest platinum prints ever made; the process requires that he create the emulsion for his 35x45-inch paper himself. We don't have enough space in this magazine to explain the whole process, but suffice it to say that it requires mixing $1,600-an-ounce platinum powder with palladium and other chemicals, plus distilled water, then applying it in multiple, careful coatings to paper. Despite working hard and skillfully to develop a formula that allows him to make prints with remarkable density, Massaia says, "I make tons of mistakes, which is not a fun thing because it's really expensive."

And it takes a long time for this perfectionist photographer to be satisfied. For the image on the opening spread, he says, "I printed that for years and years before I learned how to print it. I took that negative in 2009 and I figured out how to make a good print of it in 2011. I probably made 100 pieces of garbage with no redeeming qualities at all."

Needless to say, if you get a chance to see one of his prints in person, do so.

MICHAEL MASSAIA, WWW.MICHAELMASSAIA.COM

The Value of the Past

In many ways, the embrace of shooting film is reminiscent of the back-to-craft, made-by-hand, artisanal movements that are driving people to can and pickle vegetables, sew their own clothes, and sell one-of-a-kind goods on Etsy. The digital era has made shooting so easy and democratized that photographers are seeking ways to make pictures that remind them more of creating an artwork by hand and less of working in an office.

There is usually something to be learned by attempting a greater understanding of methods proven by history. And if shooting film really is an entirely different way of being a photographer, it behooves all of us—especially those who have grown up with digital—to slow down and to take a series of pictures uninterrupted by a feed of digital information and the glow of an LCD. Remember what it's like to make pictures when there's nothing in the world but you, a quietly receptive machine, and your subject.

FINDING FILM

And the cameras to put it in

- **FILM** Fujifilm, Ilford, and Kodak all make conventional black-and-white films in 35mm, medium, and large formats. Fujifilm and Kodak make color-negative (print) film in both consumer and pro types. Kodak has now fully withdrawn from color-reversal (slide) film, although some existing stocks may still be found at retailers. This leaves Fujifilm as the major source for slide films. Both Ilford and Kodak make chromogenic films, which are black-and-white films designed to be developed in color-negative chemistry. Other brands such as Efke, Foma, and Rollei are also still available.

- **PROCESSING** There are still many labs around the country that develop and print negatives. Even if you don't live near one, there are plenty that do mail-in services. Of course, if you're looking for quick results, CVS and Walgreens are always viable options for color-print service. Crowdsourcing on photography forums is a good way to find recommendations for reliable labs.

- **CAMERAS** For 35mm film, a number of pretty good to very high-end SLRs and rangefinder cameras are in production: the Leica MP and M7, Nikon F6 and FM10, Vivitar V3800-50, Voigtländer Bessa series, and Zeiss Ikon. Both medium- and large-format cameras and film backs are also still in production. Fujifilm, Hasselblad, and Mamiya (among others) continue to add new features and make improvements to their larger cameras. And, of course, you can find many film cameras used.

- **SCANNERS** Instead of outsourcing to print your film or get digital versions put on a disc, a film scanner can be a worthwhile investment, especially if you plan to shoot more than the occasional roll of film. Prices vary, and although spending less than $100 may be tempting, we suggest shelling out a little extra for greater speed and clearer images. Plustek's OpticFilm 7400 ($278, street) provides good results without maxing out your credit card. If you're able to spend a lot more, Pacific Image makes the PrimeFilm 120 Multi-Format CCD Film Scanner ($1,649, street). *—Sonia Weiser*

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LAB * LENS TEST

TAMRON 24–70MM F/2.8 DI VC

CONTINUED FROM PAGE 84

smoothly and evenly. But the white, glass-covered distance scales were hard to read in dim light, or when reflecting glare.

Uniformly Excellent SQF scores indicate superior sharpness and contrast. The numbers were very similar to those of the comparable (but non-stabilized) Sigma 24–70mm. At 70mm, however, the Tamron scored below the similar, non-stabilized Canon and Nikon.

We found shortcomings at the widest end of the zoom range. At 24mm, the barrel distortion (0.60%) landed well into the Visible range. More surprising was the edge vignetting that appeared at all apertures at 24mm. (At 50mm and 70mm, edge falloff was corrected by f/3.5, a decent showing.)

For shooters who want to step up to a pro-grade wide-to-tele zoom, this Tamron offers it with far less sticker shock than most. Yes, the Sigma is less expensive, but it lacks VC. As for the optical issues at 24mm, Tamron created a profiling app for Adobe Photoshop and Lightroom that easily takes care of them. —*Julia Silber*

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

24 MM

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.1	95.0	92.1	86.6	79.8
4.0	96.1	94.9	92.0	86.2	79.1
5.6	96.1	95.0	92.1	86.4	79.5
8.0	96.2	95.1	92.3	86.7	79.8
11.0	96.2	95.0	92.2	86.5	79.6
16.0	95.9	94.6	91.6	85.6	78.4
22.0	95.3	93.8	90.4	83.4	74.7

50 MM

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.9	96.0	93.7	89.6	84.7
4.0	97.1	96.2	94.2	90.5	86.2
5.6	97.3	96.4	94.5	91.1	87.1
8.0	97.4	96.6	94.8	91.7	88.0
11.0	97.0	96.0	93.9	90.0	85.4
16.0	96.2	95.0	92.3	87.1	80.9
22.0	96.2	93.7	90.2	83.0	74.1

70 MM

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.0	94.8	91.8	85.9	78.5
4.0	96.4	95.2	92.6	87.3	80.8
5.6	96.4	95.3	92.7	87.5	81.2
8.0	96.6	95.5	93.0	88.2	82.4
11.0	96.4	95.3	92.7	87.7	81.6
16.0	96.0	94.8	91.9	86.2	79.2
22.0	95.3	93.8	90.4	83.3	74.4

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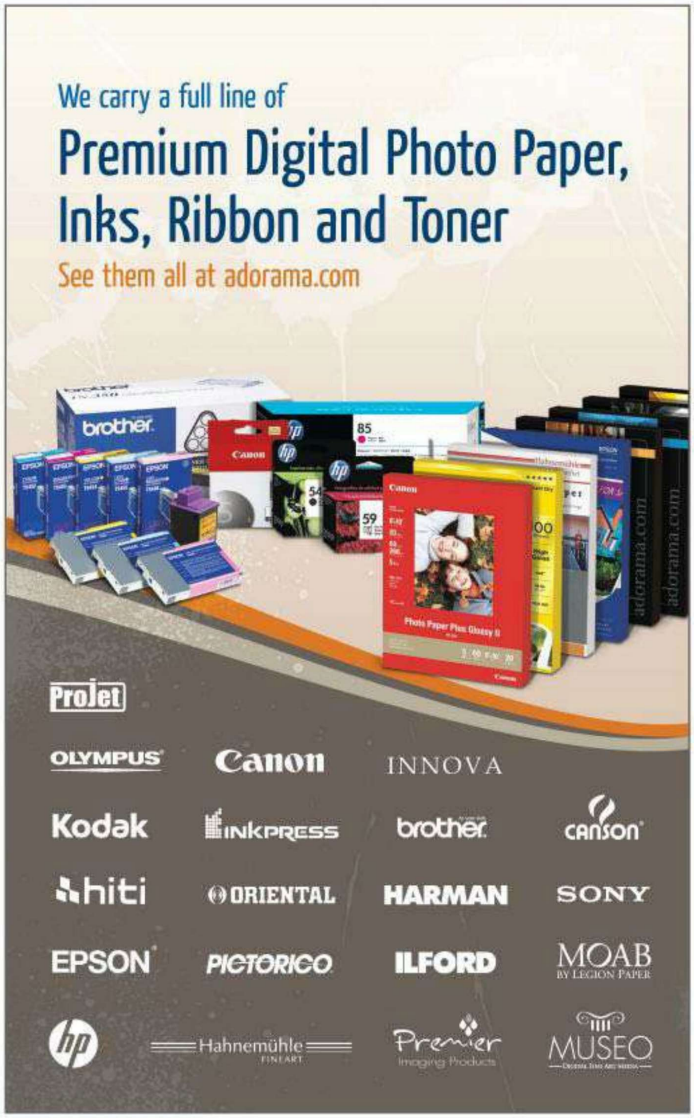

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The Flashpoint DG600 can be operated cord-free with an optional battery pack (far right), ideal when on-site electricity is unavailable.

FLASHPOINT DG600 DIGITAL AC/DC MONOLIGHT

LIGHTEN UP LOCATION LIGHTING!

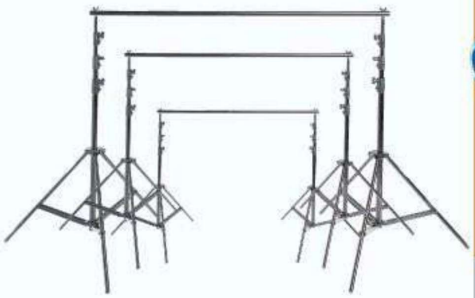
Bringing lights on location greatly expands a photographer's creative options, but their weight and bulk makes getting them there a struggle. Lessen your load with Adorama's new **FLASHPOINT** DG600 AC/DC Digital Monolight. It combines power source, controls, and flash head in a single unit—yet weighs just a few pounds and is *half* the size of comparable monolights.

Despite its compactness, our new strobe packs the power you need, with a pair of units steplessly delivering up to 600 watt-seconds of consistent 5600K light. What's more, a recycle time as fast as half a second and a flash duration as short as 1/1500 second mean you can shoot fast and with little risk of ghosting.

The **FLASHPOINT** DG600's big digital display makes settings easy to read, and its sturdy, fan-cooled housing features a secure, rubberized surface. Why pay more?

FLASHPOINT Easy-Shoot Solutions

Background Support System



The background stand comes with interlocking 4 section crossbar. and a handy carrying bag with compartments.

The top of the stand meets the crossbar there is a screw and wing nut to keep the crossbars secured to the stands.

Portable Stand	10' Stand	13' Stand
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Portable still life studio-in-a-bag with 16" x 16" soft light box, halogen lamps, blue background sweep, a custom carrier and camera stand. An easy on-the-go lighting solution

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5-in-1 Collapsible Disc Reflector

Translucent, white, black silver and gold surfaces. Perfect for reducing contrast, warming skin tones, eliminating shadows or just softening light. Can be held by hand or light stand. Available in three sizes

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LIGHTING REPORT

Lush Light

Flashpoint 500 LED Light

Model: Cory Nova
Hat: Ellen Christine Millinery
Photographer: Sandy Ramirez

The affordable Flashpoint 500 LED light lets your subject look hot and stay cool By Marvin Good

Soft light is often best for studio portraiture, whether you're shooting a glamorous model or a soccer mom. It flatters facial features, hides skin flaws, and lessens distracting shadows. And the good news is that soft light doesn't have to be expensive: The affordable Flashpoint LED 500 light lessens the need for costly strobes fitted with bulky softboxes or rigid beauty dishes.

This compact, daylight-balanced unit is AC-powered (you just plug it into a 110V or 220/240V wall socket, or a battery pack) and completely self-contained. Unlike strobes or "hot" light, it doesn't require extra attachments to produce the even, flattering illumination shown in this fashion shot by photographer Sandy Ramirez—an image created with two Flashpoint 500 LED lights, each mounted in its supplied yoke, which allows full angular control (right). One was placed several feet above the model's face, the other right behind her as a hair light.

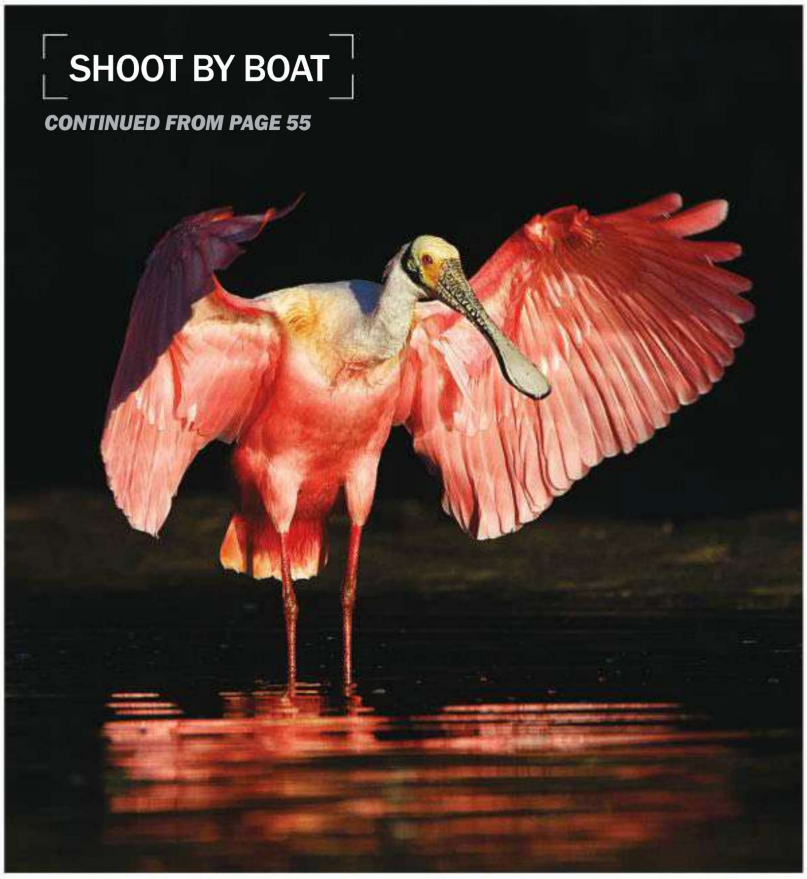
The six-pound Flashpoint 500 LED achieves that softness with hundreds of tiny LEDs spread across its 7x13-inch surface. This produces light similar to what you'd get from a small strobe with an attached softbox, gentle yet with a directional quality that brings out the subject's contours. (Directionality and spread can be further controlled with the unit's four built-in barn doors.) What's more, the LEDs produce little appreciable heat, which is why Ramirez's model never broke a sweat—a cool environment that sitters ever subjected to tungsten light are sure to appreciate. Yet LED light gives you the advantage long associated with "hot" light and not possible with strobe, that "What you see is what you get."

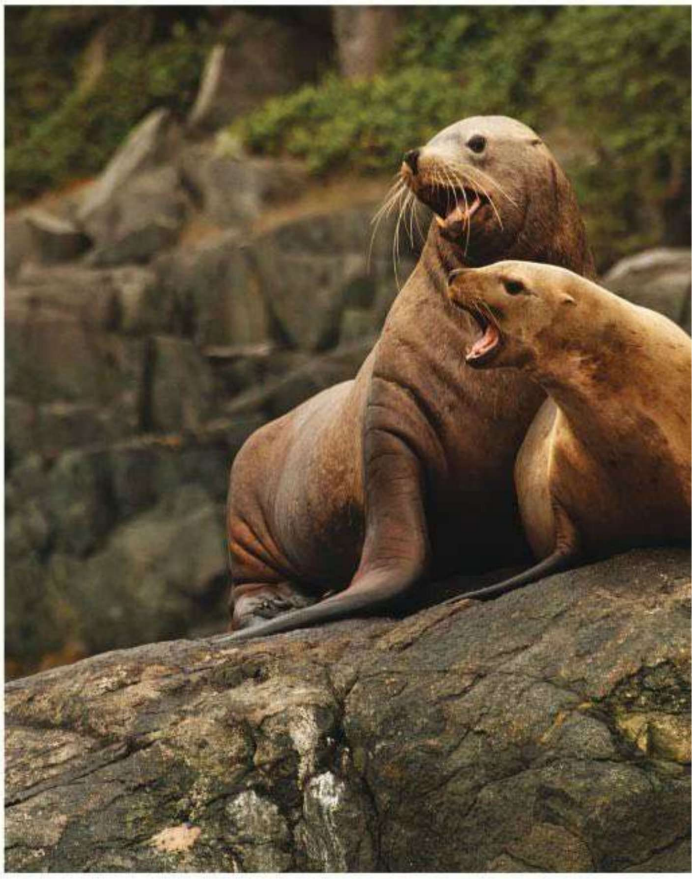
What's more, the Flashpoint 500 LED gives you complete control over your lighting ratio by means of two rheostat knobs. Each allows you to separately dim or turn off 250 of its 500 LEDs. Yet even at full power, this affordable unit draws a mere 42 watts of power, less than a household lamp. You'll save money on more than just electricity, though. The Flashpoint 500 LED now sells for less than $200—with a light stand thrown in!

The Flashpoint 500 LED light is available exclusively from ADORAMA, for $199. To order, visit the Adorama store, *Adorama.com*, or call (800) 223-2500.

SCAN TO GET YOURS TODAY

CONTINUED FROM PAGE 55





Boat o' Ops

- **ALASKA** From whale watching to bear viewing, Alaska offers a huge variety of wildlife opportunies by boat. Lake Clark National Park is a favorite for grizzlies. Use small boats to approach them safely to get great low-angle/high-action shots.

- **FLORIDA** Lapping more than 1,000 miles of coastline and flowing through nearly 11,000 miles of rivers, the state's waters reward exploration. Consider the 10,000 Islands area in the Everglades, accessible only by boat and one of the most biodiverse areas in North America: Its mangrove islands are home to innumerable birds, while the waters host dolphins, manatee, sea turtles, and other wildlife.

- **MAINE** It boasts not only an iconic shore, but also rivers, lakes, and ponds for a boatload of photo ops. Canoe in search of moose, or join a charter boat trip to shoot puffins or whales. The rocky coast showcases beautiful scenery, but rely on an experienced captain to navigate safely.

ROSEATE SPOONBILL, TAMPA BAY, FL
Birds like this congregate in rookery islands in the bay. EOS-1D Mark II and 500mm f/4L lens with 1.4x extender on Gitzo tripod, 1/2000 sec at f/8, ISO 400.

STELLAR SEA LIONS, QUEEN CHARLOTTE STRAIT, BC
Hahn anchored a small boat offshore of an island to handhold the 1D Mark III and 100–400mm lens, 1/500 sec at f/9, ISO 800.

Spray covers will protect your gear in bad weather or if you want to keep your camera out when underway. Storm Jackets handle spray and rain very well. For a fully enclosed solution, check out the ThinkTank Photo Hydrophobia. In a pinch, you can use a heavy-duty garbage bag with a hole cut in it, with a rubber band to secure it around the front of the lens.

Don't bring out your whole photography arsenal—pare down to the essentials. Odds are you will use, at most, one or two lenses. Dry bags and boxes are slow to get into, so try to work with the lenses you're holding, instead of fumbling around trying to switch gear.

You need to protect yourself, too, and this means wearing a life vest at all times on the water. Look for vests that fly fishermen or kayakers wear. These are low in bulk, have lots of pockets for stuff, and are designed to give you plenty of freedom of movement.

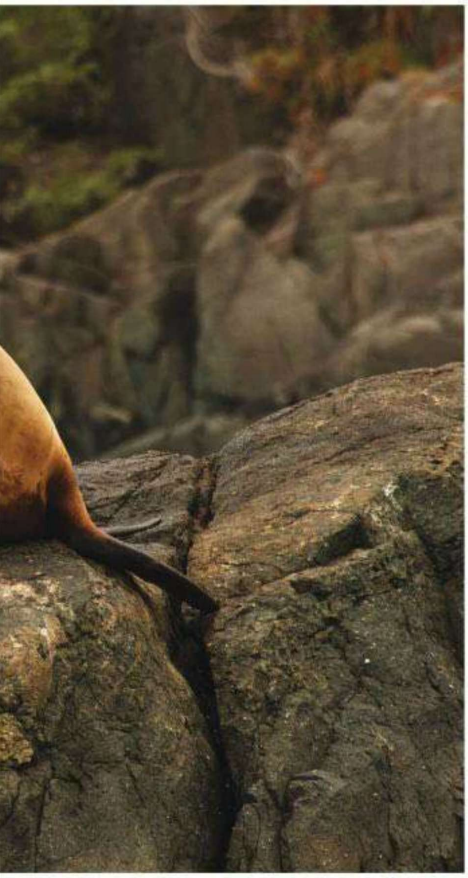
Other essentials include sunscreen and bug spray, a dry towel in a watertight bag for wiping off spray,. Bring warm clothes, including a windbreaker, even on warm days. Wind and water can pull the warmth right out of you, especially in a speeding motorboat. Wear nonskid, nonmarking shoes.

If you're paddling or captaining your own craft, sites such as www.paddling.net are great resources for gear lists, getting you started, and keeping you safe on the water. The American Canoe Association (www.americancanoe.org) offers courses around the country.

Wave Riding

Forward momentum is both a challenge and an advantage of using watercraft. Once the boat gets going, it's going to continue in that direction. A skilled captain will be able to use this to advantage in approaching wildlife. In a motorboat, point the craft in a direction parallel to your subject and cut the engines or idle by.

Don't cruise right at your subject; you will either overshoot and run into it, or be forced to kick the engine into reverse. Some



outboard engines make very loud sounds going into reverse, enough to startle and scare off some species. Also, your bow wave will continue straight at your subject (even if you stop), and might be enough to startle and flush your subject.

Try to anticipate the movement or behavior of the animal ahead of time, and put yourself in a spot where you think they will be when action begins to unfold. If you have an animal that is on the move, getting in front of it and letting it come toward you will get you the best shots.

A skilled captain can idle the engine to stay with your subject, countering your movement or theirs. If in a paddle craft, keep your paddles low as you approach, and avoid big motions and splashes.

To stay steady in a rocking boat, don't lock your knees, keep fluid, and roll with the waves. Stay seated as often as possible when shooting; you'll be much steadier and less likely to fall. If you do stand, stagger your feet with one in front of the other when shooting; this will give you a better center of gravity. If you

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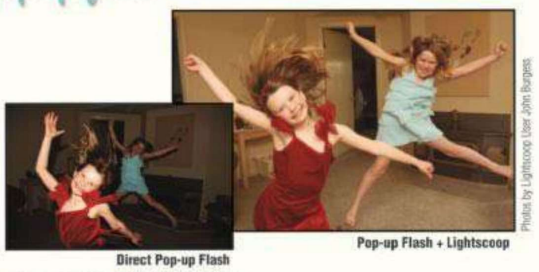
Even light with your pop-up flash



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Photos by Lightscoop User John Burgess

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SHOOT BY BOAT

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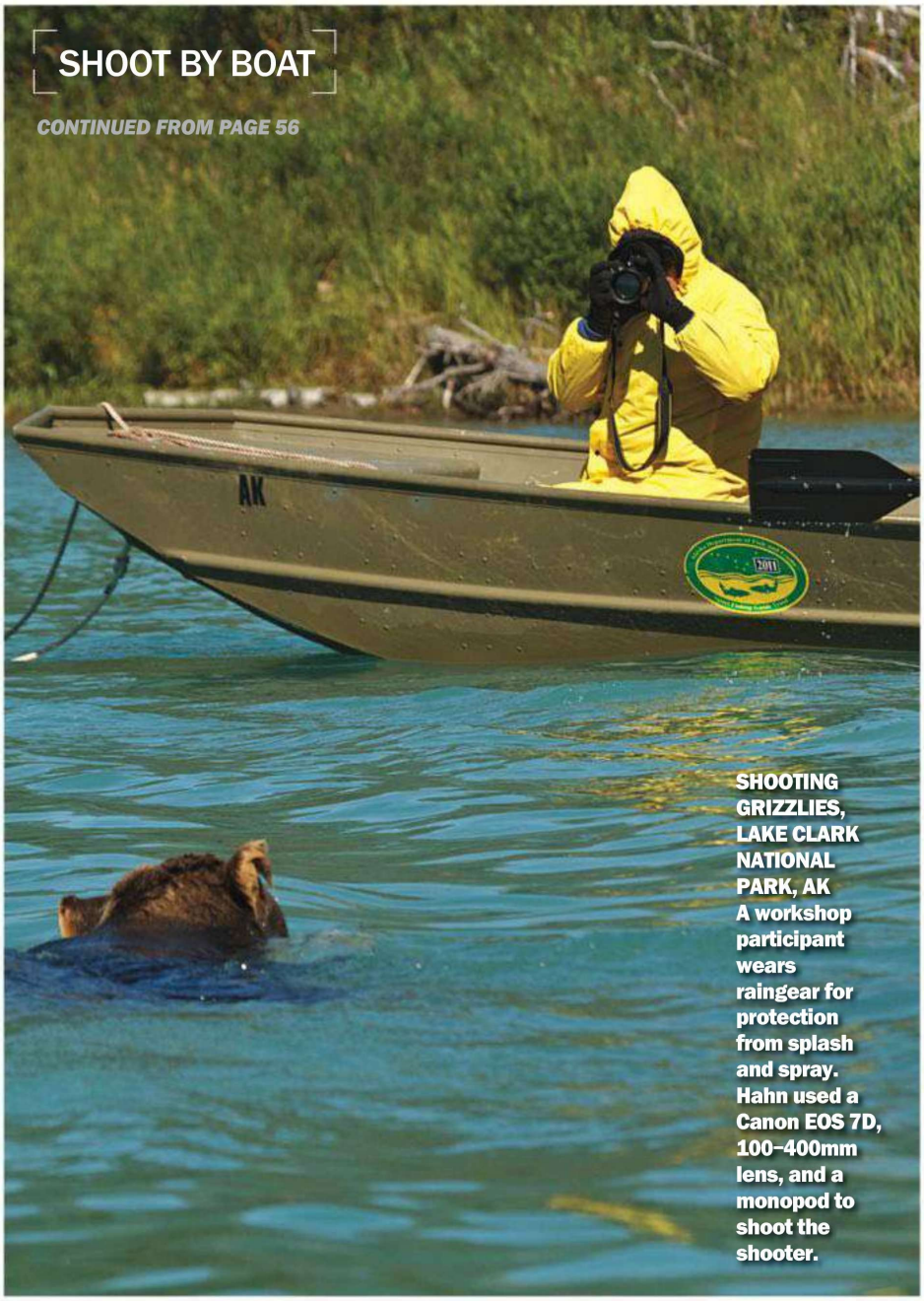

SHOOTING GRIZZLIES, LAKE CLARK NATIONAL PARK, AK A workshop participant wears raingear for protection from splash and spray. Hahn used a Canon EOS 7D, 100–400mm lens, and a monopod to shoot the shooter.

are prone to motion sickness, consult your doctor and see if motion-sickness medication is appropriate.

A tripod or monopod will anchor you and help counter those unsteady sensations. Tripods offer more stability, but can be difficult to work with in a small boat. Monopods offer a lot more flexibility, and models like the Vanguard Tracker AP-364 have a swivel-foot design that allows you to counter the effects of the boat's roll on your picture.

Settings for Success

In a boat, you have to consider the boat's motion and engine vibration as well as your subject's motion. This can make getting tack-sharp images a challenge. High ISO is your friend here, allowing you to use faster shutter speeds. On a boat, I typically shoot at ISO 400 or higher—I'd rather have a sharp image with a little noise than a really clean out-of-focus image. Software tools such as Noise Ninja can help clean up images afterwards.

The roll of the boat also makes level horizons a challenge. Time the frequency of the waves to roll along with the boat's motion. Another trick: Look at the reflection of an animal's eye in water, and position the camera so that the eye is directly above its

reflection. Finally, if your lens has a tripod collar, use it, but keep it loose—as the boat rolls, you can twist your camera to keep it level.

Animal Instincts

Coming too close to animals and birds may scare them away. With others, it may make them defensive. And while water can slow down a charging moose or bear, it will not stop them. Pay attention to body language and back off if you see the animal getting stressed by your presence. Every animal has different body language—a moose lays back its ears, a bear makes eye contact.

It's easy to become so completely focused on the action in your viewfinder that you don't realize just how close you have drifted to your subject or another animal. So take your eye away from your camera frequently to check distances, depths, and the presence of newly arrived animals.

Never get your boat between a parent and its young. A mother bear or moose will become very aggressive if you get between her and her cub or calf.

Bears typically hunt spawning salmon in fairly shallow water. Staying in deeper water off the edge of the spawning ground will still afford you great images, but prevent a salmon-chasing bear from ending up in your boat.

Finally, never feed a wild animal. While this is tempting with animals that come up to your boat, such as sea lions or alligators, it is illegal and dangerous. Animals that are fed can become reliant on humans for food and aggressive in seeking handouts, endangering both you and them.

Professional nature photographer Jason Hahn (outdoorphotoworkshops.com) has been widely published and leads nature photography workshops and tours worldwide.

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BACKSTORY

Head Case

Phil Toledano's spaced-out vision

I ORIGINALLY shot this for *Men's Vogue*. I think it was a story about the business of space. The art director was on set and said, "Anna Wintour does not like photos against black. Can you change it?"

I said, "No, because the black looks best." There are only so many compromises you can make. I'm happy to listen to ideas, but ultimately the picture comes first.

I used cotton wool for the smoke. I'd tried this on an earlier image to create clouds and became obsessed with it. I made this in two shots with a Contax 645—first was the man in the suit, next a shot of the astronaut helmet and wool fabric. Both were lit using strobes and composited in Adobe Photoshop.

The photo did not run in *Men's Vogue*. But it's run in lots of other magazines since, and people love the photo. So do I—his body's on the ground and his head is disappearing into space.

—As told to Lori Fredrickson

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